

The Principles and Practice of Filling Ceeth with Porcelain.*

By Dr. John Q. Byram, Indianapolis, Ind.

The Creatment of Ceeth Affected by Malformation and Erosion.

In many cases of malformations, the teeth are usually marked by pits and grooves; they present an atrophied condition, and their incisal halves are partially denuded of enamel. If more than the incisal one-half is involved, the malformation can be corrected best by constructing an all porcelain jacket crown. If, on the other hand, less than the incisal one-half is involved, the condition may be remedied with less pain and annoyance to the patient by the use of a jacket partial crown. Such an operation is not indicated unless the tooth can be prepared in such manner that the remaining stump affords a secure attachment and permits a sufficient bulk of porcelain to insure strength.

The approximal walls should converge slightly toward the incisal edge (Fig. 51), and the shoulders formed by their termination should run at right angles to the axis of the tooth. The shoulders formed on the labial and lingual surfaces should run at right angles to the curves of these surfaces. Enough of these walls should be involved to give a sufficient bulk of porcelain and to prevent the tip from appearing bulky and unsightly (Fig. 52).

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The approximal walls should be prepared with knife-edge stones, while the remaining enamel should be removed from the labial and lingual surfaces with flat-face diamond and fissure burs (Fig. 4A and 5B). After which plug finishing burs and Arkansas stones (Fig. 4B and 5C) should be used to polish the tooth stump.

In case of extensive erosion on the labial surface and where there is no decay on the approximal or lingual surfaces, the tooth may be

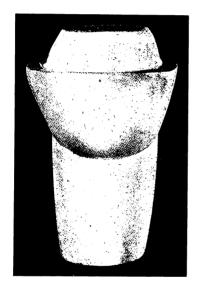


Fig. 51.

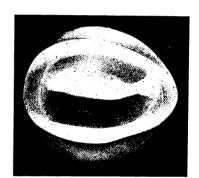


FIG. 52.

treated by constructing a veneer of porcelain for the labial surface. It has been found that such operations check erosion and preserve the vitality of the tooth for an indefinite period. A shoulder following the curvature of the gingival line (Fig. 53) should be formed across the labial surface, and enough of this surface should be involved to permit the porcelain to be of a sufficient thickness to insure strength and to prevent a change of color by the cement (Fig. 54). The entire incisal edge should be involved to insure proper retentive resistance and to prevent fracture of the porcelain. The incisal wall should form an acute angle with the labial surface (Fig. 55).



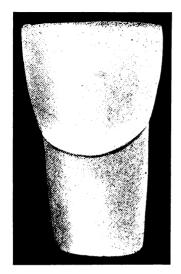


Fig. 53.



Fig. 55.

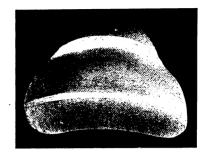


Fig. 54.

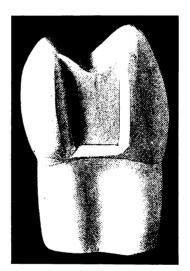


Fig. 56.



Fig. 57.

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After the incisal edge has been removed with flat-face stones, sufficient enamel and dentin should be removed with stones from the labial surface to insure proper thickness of porcelain. Then the shoulder should be formed with flat-faced fissure burs at the gum margin. After this has been done the approximal margins are to be made smooth with sharp chisels and Arkansas stones.

Che Preparation of Cavities in Bicuspids and Molars.

Experience has proved that porcelain is not the best filling material for most cavities in bicuspids and molars. Their occlusal surfaces present a series of inclined planes which when restored with a friable material, lacking in edge strength, may cause imperfect fillings in a short time, by the breaking of the margins of these fillings. There are, however, many cavities in these teeth that should be filled with porcelain for the cosmetic effect. The marks of occlusion should be studied in the preparation of occlusal and approximo-occlusal cavities, and their margins should be carried to points where they will have the least masticatory stress, for thereby the life of the filling is increased. If cavity margins are formed at points at which the stress is unduly strong, these margins of porcelain will fracture and leave faulty fillings.

The function of a filling is: first, to check the existing decay and to prevent if possible its recurrence; second, to restore the original form of the tooth in order that it shall maintain its proper relation with the other teeth and to protect the gum in the inter-proximal space, and third, to meet the cosmetic requirements. While porcelain is not indicated in many forms of cavities in bicuspids and molars, there are cases in which we should not lose sight of the cosmetics, and in such cases porcelain should be given due consideration. Gold foil and amalgam have preserved many teeth for a considerable length of time, but when we note the number of failures that have been made with these materials, we feel that we are justified in considering the inlay principle of filling cavities in bicuspids and molars.

It is essential that teeth with approximo-occlusal cavities be wedged, in order that the gum in the inter-proximal space may be protected; that the margins of the filling may be more easily cleansed; that the tooth when filled may be given its natural contour and that the matrix or impression may not be distorted upon removal from the cavity. Too many dentists lose sight of the advantages of wedging the bicuspids and molars before filling cavities in these teeth. It is just as important to wedge these teeth before filling as it is to wedge

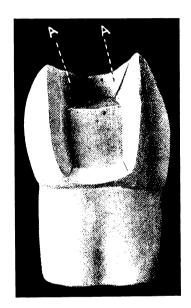


incisors and cuspids. If more attention were paid to this step of the operation, there would be fewer cases of recurrence of decay at the margins of fillings.

Approximo-Occlusal Cavities.

In case the patient has reached the period of immunity, and there are no fissures extending from the cavity, mesio-occlusal cavities in bicuspids and first molars, without a step may be filled with porce-

lain. The axial margins should be extended far enough so that they will not come in contact with the approximating tooth.





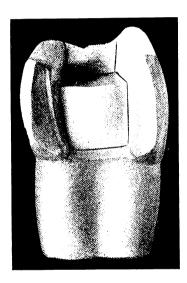


Fig. 59.

The gingival wall should be flat and should form a right angle with the pulpal wall. The buccal and lingual walls should diverge toward the approximal and occlusal margins (Fig. 56). The walls should be grooved in the dentin occluso-gingivally to form mortices (Fig. 57), and they should run at right angles with the approximal surface.

Approximo-Occlusal Cavities with a Step.

The gingival wall should be flat and should form a right angle with the pulpal wall. The buccal and lingual walls should be so prepared that their margins extend in straight lines which slightly diverge toward the occlusal surface (Fig. 58). These walls



should converge slightly toward the pulpal wall and they should unite with this wall in the form of a curve.

The step should be deep enough to insure strength to the porcelain, and if possible it should be wide enough to form its margins at points where there is no masticatory stress. Its seat should be flat and at right angles with the pulpal wall. Its axial walls should diverge toward the approximal marginal ridge (Fig. 58A), and also toward the occlusal surface.

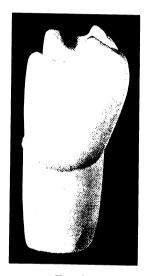


Fig. 60.

Earge Approximo-Occlusal Cavities. In extensive cases the buccal and lingual cusps should be involved and the cavity margins extended on the buccal surfaces, obliterating to a large degree frail margins of porcelain on the occlusal surface. The gingival wall should be flat and at right

angles with the pulpal wall, and its margins should unite with the buccal and lingual margins on these surfaces (Fig. 59). The buccal and lingual margins should extend occlusally in the form of a straight line to the occlusal third and then they should extend laterally in the form of a reverse curve to the axial walls of the cavity, uniting with the occluso-axial margins of the cavity in the form of a curve (Fig. 60). The walls of the cavity should slightly diverge from the pulpal wall in both directions.



In cases of bucco-occlusal or approximo-occlusal cavities involving most of the crown of the tooth and extending beyond the gingival line the cavity may be prepared as outlined in Fig. 61A. The posts are inserted in one or more canals and platinum caps are made to fit over them. The matrix is burnished to conform to the walls of the

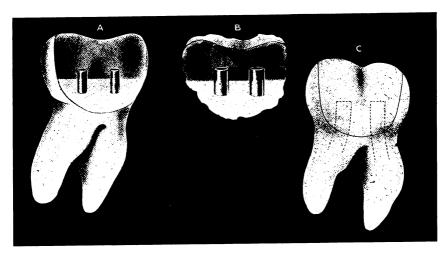


Fig. 61.

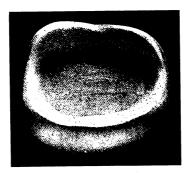


Fig. 62.

cavity and the caps are held in relation by sticky wax. After chilling the wax, the matrix and caps are removed, and soldered (Fig. 61B). The porcelain is then fused around the caps and the matrix is readjusted for the final burnishing. The matrix becomes a part of the inlay and should be properly trimmed to conform to the margins of the cavity



after the inlay has been finished. After the inlay has been set the matrix should be finished to the margins of the cavity as a subsequent operation (Fig. 61C).

Deep Cavities in the Occlusal Surface Tof Molars.

Cavities in lower molars involving the occlusal surface to the marginal ridges leaving the axial walls unsupported by dentin and in which there is no decay on the approximal surfaces, may be filled with por-

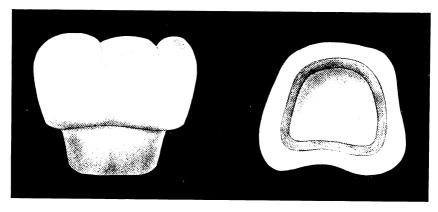


Fig. 63.

celain. The margins of the cavity should involve the marginal ridges and they should be beveled in such a manner that they form obtuse angles with the axial walls of the cavity. The pulpal wall should be flat. The axial walls should be extended far enough to protect the margins from stress and they should form slightly obtuse angles with the pulpal wall. (Fig. 62.)

For pulpless molars where the entire occlusal surface is involved, the pulp chamber is so prepared that the axial walls are slightly divergent (Fig. 63). The occlusal margins are beveled to form slight obtuse angles with the axial walls. In case additional retentive resistance is required, a post may be inserted in one canal and permitted to extend far enough into the porcelain to give a strong retention. While this gives an entire crown of porcelain, the principle of construction is the same as applied to that of inlays.



H Plea for More Scientific Forms of Artificial Ceeth.

By J. LEON WILLIAMS, D.D.S., London, England.

I wish to express a few words of endorsement of Dr. Stewart I. Spence's plea at the close of his very able and interesting articles on articulation of artificial teeth which have recently appeared in ITEMS OF INTEREST.

Dr. Spence says: "Now, to get these six inclines (three in each jaw) ground so as to fit perfectly is well-nigh impossible. All this could be avoided by the manufacturers. If they would make teeth according to Nature's patterns, and make the upper and lower teeth to occlude with each other, it would be comparatively child's play to set up scientifically articulated porcelain dentures. If the manufacturers would also abandon the thousand and one molds on the market, and agree together to use only similar and a very few molds, how easily then might the dentist obtain the exact size and shape of any tooth required in all ordinary cases."

This is precisely the view which I presented before the Odontological Society here in London some five years ago, and I afterward met the board of directors of one of the dental manufacturing companies and pointed out the very serious defects in all artificial teeth as they are made to-day, the superfluousness of the great number of molds and the complete lack of all scientific system in the management of the whole business. Their reply, substantially, was that the men who would most appreciate the changes which I suggested buy very few artificial teeth, and that the dentists who purchase nine-tenths of the teeth sold are satisfied with what is supplied. I am sure that these reasons show short sighted business policy, and if I am not greatly mistaken, some manufacturer of artificial teeth will, within a year, adopt most of the changes which I am about to suggest, and the manufacturer who is first in the market with teeth made and arranged according to these suggestions, will find his capacity greatly taxed to supply the demand.

Faults in Artificial Ceeth. Let us begin with the occluding or articulating surfaces of the teeth. These surfaces, as presented to-day in all artificial teeth that I know anything about, are simply utterly foolish. There is no other

expression that fits the situation. They are utterly foolish, and the efficiency of artificial teeth is diminished one-half by this foolishness. For the most part the molars and bicuspids, especially the molars, are too



small. The grinding surfaces of molars and bicuspids should be carefully copied from typal forms of natural teeth, before they are much worn. If it were desired to give a worn effect to the teeth, as it often is, this could be much more easily and effectively accomplished if the teeth had the right shape at the start. With reference to the molars an important point has, so far as I am aware, been entirely overlooked by all writers on this subject, and that is the ever increasing disparity in the width of the upper and lower jaws in edentulous cases, the posterior part of the maxilla becoming relatively narrower as absorption proceeds. This condition has never been provided for in the making of artificial teeth. Yet it could easily be done by increasing the outward-downward slope of the buccal surfaces of the upper teeth and giving the reverse slope to the buccal surfaces of the lower teeth. Nature has already given the hint for this, but it will probably be necessary to slightly exaggerate this hint to meet the exigencies of the artificial condition. If this were done the necessity for reversing the lower molars as described by Dr. Spence would never arise. It would enable us to place the upper molars a little more outside the ridge without introducing the difficulties which follow this action with teeth as now made.

Number of Molds Required.

With reference to the number of molds required, I have for years maintained that ten types of teeth with about six sizes for each type would, if the types were carefully studied, give us a far better

selection of teeth than is now presented by all the molds of all the manufacturers combined. Let the manufacturer consider for a moment the saving effected in capital invested by this plan and the greatly enhanced convenience to both dentist and manufacturer which would be gained. A card of teeth showing the different types and sizes and a good assortment of shades would place the dentist in a better position for selecting exactly what he needs than he now is when standing before the largest stock of teeth carried by any firm. It is simply astounding that in the United States, where scientific methods are so much talked about and where time is considered such an important factor in business, that something of this method has not been thought of before.

Sexual Difference in Teeth.

Another thing that should certainly be done by the manufacturer adopting these suggestions, is to design all molds in duplicate for male and female. There is as much sex character in the teeth as in

any other feature, and it is quite time that this should be recognized by a body of men claiming to be scientific.



Let us say, then, that we have the four basal types of temperaments bilious, sanguine, nervous and lymphatic-represented, with one crossing of each with the others. That gives ten types of teeth which with six sizes for each type would make one hundred and twenty molds to cover the entire range of male and female forms. I do not know how many molds of teeth the different manufacturers are represented by, but I have no doubt there are several thousands on the market. What a waste of time and money! What a systemless system! One manufacturer offers teeth from five hundred molds. Another manufacturer offers five hundred more quite different. None of them are based on careful artistic studies of temperamental types of natural teeth. The profession has no voice in the matter-it takes what is offered. And the teeth that are offered bear about the same relation to what we should have from the artistic point of view, that the illustrations in a fashion magazine bear to the portrait work of an artist of repute. Everything which might be included under the artistic expression, "Accidents of Nature," as they are found in natural teeth, seem to be carefully avoided in artificial teeth, and that, of course, is just the reason why they look artificial. The surface texture and the color of artificial teeth is positively bad—worse than it was a few years ago-at least, it is so in the teeth offered here in England. There is no fine, natural gradation of shading from tip to base, and the base or neck of the tooth is nearly always much too yellow. One might enter still more into detail over the matter, but my purpose in this letter is merely to call attention in a general way to the subject. Is it not about time that this state of things were changed? And it can be changed without difficulty, and in a year or two. If the Editor of this magazine would take up this important matter with the energy he has shown on more than one occasion when working for the benefit of the profession, we might, within two years, have artificial teeth on the market which would make the products of to-day unsalable to all who have ideals or ambition to excel in this field. In the meantime I ask all who are interested (and that should mean every reader of this communication) to write, if only a postcard, to Dr. Ottolengui expressing views and desires, and I especially ask all who are willing to assist in the undertaking by taking impressions and making models of fine sets of natural teeth to indicate this in their letters. The response to this appeal will indicate just where we stand as a profession on the subject of dental prosthesis.*

^{*}Since the above was written I have discovered that Dr. M. H. Cryer has called attention to this effect of resorption on the relative widths of the jaws. I am glad to be able to add the weight of his authority to the demand for a modification of tooth forms which will to some extent overcome this difficulty.—J. L. W.



Alveolar Abscess Breaking on the Outside.

Preventive Creatment.

By Dr. B. E. Fortiner, Camden, N. J.

Lately I have seen so many disfiguring scars along the lower margin of the mandible that I wish to describe a method of treatment that will, if followed faithfully, positively prevent such a termination from any abscess to which it is applied.

Suppose the patient presents with a swollen jaw caused by a neglected tooth and a putrescent pulp. The tooth is so sore that it cannot bear the least pressure, but there is no discharge of pus; even if opened there is no pus, for while the abscess does not appear to be advancing toward resolution the tendency of the swelling apepars to be downward. If any hot, moist poultice or application is placed on the outside of the face it will encourage the formation of pus and the tendency of the pus is to follow the course of the least resistance; and by moistening and softening the skin you invite the pus to break through on the outside.

Calcarea Sulphuricum. I use two constitutional remedies in these abscesses. If the swelling is very hard and I am not quite sure that pus has formed I prescribe calcarea sulphuricum in the third trituration—it is called

three X (3.X.). It is not a homeopathic remedy, although it is purchased at a homeopathic pharmacy. Get some fine lawn, such as dress ties are made of; have it washed so that it will be soft, put about fifteen grains of the calcarea sulphuricum 3.X. on a little piece of the lawn. about two and a half inches square, bring the edges together and tie with thread into a little bag about two-thirds or three-quarters of an inch long, dip this in water to moisten it, and lay it on the gum over the sore tooth next to the cheek. These bags are soft and will lie over the sore tooth without causing much mechanical irritation by their presence as do tablets. It will take nearly an hour for the powder to dissolve; the patient is to swallow the saliva that forms in the mouth while the bag is in. Give him a dozen of them and have him apply one every hour. This remedy has the effect of preventing the formation of pus and it seems to produce absorption and relieves the pain. I have seen it quickly reduce large stony blind abscesses when nothing else would.

Silicea.

My other remedy is *silicea* 6X. *Silicea* is pure quartz. It is a Schuessler tissue remedy, its crystals are sharp and it cuts ahead of the pus, making

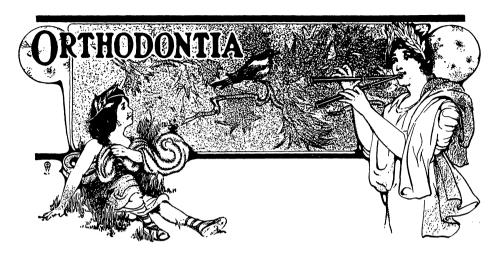


an easy access or passage for its escape. Unlike the calc. sulph. it rather favors the formation of pus so that if the patient presents with an acute abscess, with pus positively developed, suffering an agony of torture with the possibility that it may break and discharge on the outside, I give him a dozen of these bags containing fifteen grains of silicea 6X. Put one as near the swelling on the gum on the inside of the mouth as you can, have him swallow all of the saliva, and keep repeat-Besides this, I prescribe four drams of Waming this every hour. pole's hypo-bromic comp. to which I add one grain of acetate of morphia. I direct him to go home and go to bed in a dark room and take half a teaspoonful of this mixture in a tablespoon of water every half hour until he goes to sleep. While he is asleep the silicea acts and if the abscess has not broken of itself while he is asleep, the condition on awakening will be very much relieved because the silicea will have made an easy path for the pus, and it will cause the pus to come toward the gum and break through the gum, and not through the jaw and skin. While silicea favors the escape of pus the quantity will not be as great as where it is not used.

In cases where the jaw has become necrosed, *silicea* quickly throws off the dead bone and induces rapid healing. Scraping of the bone is never necessary where *silicea* is prescribed.

If these remedies are used in the treatment and in alveolar abscesses, a vast deal of suffering will be avoided and many disfiguring scars on the neck and along the margins of the jaw will be prevented. I believe that the application of any moist substance, such as antiphlogistine or poultices, to the surface in the presence of threatened alveolar abscess is malpractice. Dry heat, such as hot hop bag, hot salt bag or hot water bag is permissible and helpful, but no moisture. A good antiseptic mouth wash diluted with hot water should be used in the mouth three or four times a day, especially after the abscess has broken. Then halfgrain tablets of calcarea sulph. 3.X. should be given, five tablets every three hours to terminate the discharge of pus.





Orthodontia in Relation to the Development of the Bones of the Face.

By Frederick C. Kemple, D.D.S., New York City
Read before the New Jersey State Dental Society, July, 1907.

Within the past decade much light has been thrown on the internal anatomy of the head and face, by which we have been able not only to gain a far better knowledge of the arrangement of the various parts, but also to study the physiological and pathological relations of its different structures.

The fact that well rounded, fully developed dental arches are almost invariably accompanied by well developed nasal spaces, well developed ethmoid, sphenoid and maxillary bones, we have learned, is not a simple coincidence, but the result of a relationship among the different structural parts of the face which is so intimate that the developmental influence of one part must affect to a greater or less degree the development of every other part.

Per contra, if the development of any part of the face be arrested, or if deformity occur early in life, the result will be a more or less abnormal or deformed development of every other part. Because of this far-reaching influence, the operator in caring for the teeth of his little patients should be eternally vigilant for the appearance of any aberration in the arrangement of the deciduous, or the development of the permanent denture.



The close pathological relationship of the various structures in this region and the interdependence of some of the different organs found within this field have only of recent years been recognized. Until within the past decade or two oculists treated the eyes and otologists treated the ears as if these organs were each complete in themselves. Their physiological relation with the nose and throat and teeth was not considered in diagnosis. Lesions of either were usually regarded as local, and received only local treatment.

In the light of present day knowledge, however, this method of local diagnosis has practically passed away. No diagnosis is complete which does not consider the part affected in its relation to the organism as a whole. This is particularly true in the treatment of eye and ear lesions. Specialists now recognize that there is no region in the entire human anatomy where reflex disturbances are more common and, with this fact in mind, their diagnosis not infrequently begins with an examination of the teeth.

It is only necessary to examine a few of the splendid anatomical sections of the head and face made by Dr. Cryer to see the intimate relationship between the upper dental arch, the nasal spaces and the maxillary antra, and in turn see how the constriction of or narrowing of the dental arch will cause a collapse of these spaces and disarrange the entire internal anatomy of the face.

In some of these specimens where the upper dental arch is much constricted, the nasal spaces are found to be almost entirely occluded and the maxillary antra nearly obliterated. Such malformed conditions of structure are produced during the early period of growth while the bony framework is yet in a plastic or formative state. The writer believes nasal obstruction in very early life to be an important causative factor in misdirecting the forces which act in the formation of the jaw.

Eack of Resistance During Youth.

All young growing structures manifest great susceptibility to any constantly acting force, however slight the force in itself may be. The readiness with which the bones of the skull and face of

young children yield to the lightest pressure is quite remarkable.

Ethnologists believe the kind of pillow on which an infant lies will modify the shape of the skull. A cicatrix from a burn may permanently change the shape of the facial bones. In cases where the head has become fixed to one side through disease the position of the eye and shape of the skull has been changed. Darwin has shown that such a trifling cause as the lopping forward of one of the ears of a rabbit "drags forward all the bones of the skull on that side."



Thus it is easy to see in the growth of such a complex structure as the human face how a change from the normal to the abnormal in the forces acting on its developmental growth, due to whatever cause, and however insignificant the change may appear, might result in such an abnormal anatomical arrangement of the parts as to materially interfere with their functional efficiency.

Injury to the head or face at birth, pathological conditions of the nose or throat in early childhood, habits of thumb-sucking or lip biting, and premature loss of either deciduous or permanent teeth, are all prolific causes of this change from the normal to the abnormal in the development of the bones of the face.

Influence of Altered Functions.

The writer will add one other cause which he regards as the most important, because the most universally active—the primary cause of some of the causes enumerated above. That is the tendency

of all organs to vary through change of function.

From the protamoeba to man, function has preceded structure. From the lowest form of life to the highest every advance made in structure seems to have been for the better adjustment of the organism to perform its functional activities. And when these activities have become changed through change of environment or mode of living, a change of structure has gradually followed.

Darwin found "in the domestic duck that the bones of the wing weigh less and the bones of the leg more in proportion to the whole skeleton than do the same bones in the wild duck," and he assumes "that this change may be safely attributed to the domestic duck flying much less and walking more than its wild parent."

It has been found, also, that the weight of the lower jaw is greater in savage than in civilized races—in about the proportion of 5 to 4—while the mean weight of the skulls examined was nearly the same. (Talbot, page 155.) May not the same conclusion be drawn here as in the case of the wild duck?

Also, many of the most eminent men of science agree that "modifications of structure caused by modifications of function are transmitted to the offspring."

This, in the writer's opinion, can be ascribed as the most potent cause for the great number of malformed, poorly developed jaws of the present civilization.

So great has been the change in the structure of the jaws of civilized man that a well developed face with the full complement of thirty-two teeth in nearly normal occlusion is so rare as to excite comment and admiration from every dentist.



Among semi-barbarous or primitive tribes exactly the opposite conditions prevail. Well-developed jaws, teeth comparatively free from caries and in nearly normal occlusion are the rule, rather than the exception. These people have continued to use their jaws and teeth for the purpose of mastication, and their diet includes articles so tough as to require the most vigorous chewing. Among the Esquimaux it is a custom to chew the raw skin of the whale or seal for its blubber; the Modoc Indians are said "to munch the raw kais root all day long;" and the "Bushmen, when short of food in winter, chew prepared gnu skin until their very jaws ache."

Effects of Disease.

Thus you may go through the entire catalogue of primitive people and find the same vigorous chewing of tough roots, herbs, skins, etc. Note the difference between the functional activity of their

organs of mastication and those of civilized man and, the writer believes, you have found the cause for the great difference in the structural development. The masticatory apparatus of civilized man is simply suffering from disuse.

The lack of development of the jaws in highly civilized races—and this applies particularly in America—is observed almost as frequently in very young children as in adults. Symptoms of abnormal development, and in some instances marked malocclusion, may appear as early as the second or third year. In the deciduous denture of five or six years this tendency toward malocclusion becomes more apparent in an increasing number of cases in which, if the growth of the jaw be not stimulated, the result will inevitably be a malocclusion of the permanent teeth, and a consequent derangement of the anatomy of the face.

Malocclusion of Deciduous Ceeth.

In many of these cases the departure from the normal at this early age is so slight that only the most careful observation will detect it, or it may appear so insignificant as to receive no consideration, and yet within this inconsiderable aberration

may lie hidden the forces which, through their continued action along abnormal lines, will result in a most aggravated form of malocclusion. A deformity may result which will involve the structures of the internal face to such a degree as to materially interfere with their physiological efficiency.

It is in cases of extreme malocclusion in adult life that reflex disturbances are so common and frequently difficult of diagnosis, a condition which causes this entire field to become of peculiar interest alike to the otologist, the oculist, the rhinologist and the dentist; and the writer



will venture the prophecy that the day is not far distant when consultations among these specialists, in which the opinion of the dentist will have its full weight, will be quite the common thing.

And yet many of these cases of extremely narrow upper dental arches with consequent narowness of the nasal spaces and prominent upper incisors, which in adult life defy the best efforts of the orthodontist, were probably in their earliest stages but simple aberrations in the development of the denture, the correction of which could probably have been accomplished by very simple means, thus allowing the uninterrupted growth of the denture to continue to completion. Such treatment might only have entailed the placing of one or two teeth at eruption in their correct positions, or the slight expanding of one or both arches as an aid in allowing the erupting teeth to assume of themselves their natural positions.

You may say these conditions are only hypothetical and do not describe specific cases. This is true, but the conditions were made general in order to cover more of the field of orthodontic work, and because the conditions named are descriptive of similar cases that come to our notice almost every day.

In the deciduous denture the lack of development in the incisive region is frequently overlooked entirely until the appearance of the permanent lower centrals which in erupting are crowded out of position for lack of space—a condition which is not infrequently brought to the attention of the dentist by the mother of the child. At the same time the lack of development in this region had probably been directly indicated for a period of two or three years prior to the eruption of these teeth.

In every case where interstitial spacing between the deciduous centrals, laterals, cuspids, and first molars fails to appear, malocclusion of their permanent successors must inevitably result.

In jaws which seem to have a normal development the spacing of these teeth is usually well marked as early as the fourth year.

The combined width of these spaces should amount, approximately, to the difference between the combined widths of the six anterior deciduous teeth and the combined widths of their six permanent successors—thus allowing sufficient room for the permanent teeth to erupt in normal order and position.

When nature fails in this development, the writer believes it to be the duty of the dentist to give his assistance as soon as the symptoms indicate such need.



Early Creatment.

By very simple means it is possible to stimulate growth in the incisive region at an early age, and by this growth probably abort a deformity which, if allowed to mature, would require months of treat-

ment for its correction.

The same may be said of many of those cases which are characterized by the receding chin and apparently excessive protrusion of the upper incisors. Symptoms heralding this condition appear in many deciduous dentures, and the early treatment of these cases becomes very simple when compared with the treatment required after the eruption of the permanent teeth.

In deciding at what age to treat irregularities of the teeth, this fact should be kept in mind: by early treatment we are assisting nature in overcoming some of the obstacles which interfere with orderly eruption, and with these obstacles out of the way the teeth establish themselves in their proper positions through the natural process of growth. By later treatment, *i. e.*, after the permanent teeth are fully erupted, the operation becomes one of reconstruction; we compel a resorption of tissue and nature must do her work a second time.

Automatic Regulation of Ceeth.

It is a grievous error to regard any case of malocclusion as self-corrective. Occlusion always implies a contact of the upper and lower teeth. If, when the upper and lower teeth are in contact, some of their inclined planes become engaged in an ab-

normal relation, it is impossible for nature to overcome this locking process. Nature will do her full duty in development along proper lines if she be not too heavily handicapped, but when she is obstructed in her orderly course she simply does the best she can under the circumstances.

As often observed, teeth in process of eruption present a very irregular appearance, but upon careful examination they are found to occupy their correct positions in relation to their antagonists of the opposite jaw. In such cases the malpositions of the teeth are more apparent than real. As the development of the denture proceeds, the inclined planes become properly engaged, and through their influence the apparent irregularity of the teeth disappears. It is only under these conditions that an irregularity is self-corrective, and distinction should be made between such an irregularity and malocclusion. Where malocclusion really exists the deformity is increased and correction made more difficult with the eruption of each succeeding tooth. The forces at work being misdirected by the improper locking of the cusps, the influence of the inclined planes and the eruptive force of the teeth tend toward further deformity as the denture approaches completion.



It is for the purpose of gaining the assistance of the inclined planes and the eruptive force that the writer urges early treatment wherever it be possible. Guide the teeth to their correct positions in the arch during the eruptive period, rather than drag them through the alveolar process after they have become established in their improper positions.

Preventive Creatment. It would be better still, if before the appearance of the permanent teeth sufficient development of the jaws can be induced to allow their orderly eruption without any interference on the part of the

dentist. By either of these methods a denture is established practically through the process of natural growth, one that approaches the normal as nearly as the tooth forms of the individual case will permit.

Development as described may often be stimulated through a very gradual expansion of the lower arch before the loss of any of the deciduous teeth, the expansion being produced so slowly that the enlargement of the upper arch follows through the force of occlusion, the little patient suffering no pain and little if any inconvenience.

Such treatment is prophylactic—it is prevention rather than cure—and is entirely in accord with the accepted principles of orthopedic surgery.

In this connection, the importance of preserving the deciduous teeth till such time as their successors appear, can not be too earnestly urged. Thus many of the deformities of the jaws and face with which we have to contend might be aborted by judicious early treatment.

The age at which the natural growth of the jaws is complete probably varies within a wide range, but the fact that nature unassisted has been unable to assert her mastery in the correction of many of the deformities, due probably to nasal obstruction, after the age of seven or eight years has given rise to the impression that the growth of these parts is nearly complete at an early age. Kyle, in his "Diseases of the Nose and Throat," says: "The worst feature of these developmental deformities is, that unless perfect nasal respiration is established early in life—i. e., before the fifth or sixth year, or not later than the seventh—the bony and cartilaginous framework becomes so firm that little can be done toward increasing the nasal space for breathing, and the individual will, of necessity, be a mouth-breather for life." (Page 268.)

The writer believes in those cases of nasal obstruction where mouthbreathing has continued for sufficient length of time to produce a narrowing of the dental arch and collapse of the nasal space, the nasal space fails to develop after the rhinologist has completed his work, not because the "bony framework is too firm" to permit development, but because at



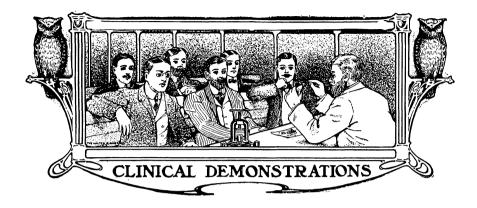
the age of six or seven years the cusps of the teeth have become locked in this cramped position and nature cannot release herself from the influence of their inclined planes. The fact that development of these parts immediately follows the release of the teeth from their cramped positions would indicate that growth here had not ceased, but had been checked by forces acting abnormally.

Unfortunately, we have no means of measuring, or even observing the changes which take place in the internal face following orthodontic treatment, but that internal changes do occur and subsequent development of the parts result is evidenced by every successful operation.

The widening of the alveolar arch in the molar and bicuspid region will sometimes, in extreme cases, amount to a full half inch, and in such extreme cases the entire contour of the external face becomes much changed. In many cases where the efforts of the rhinologist have failed to relieve the mouth-breathing, relief has followed orthodontic treatment, not only at the age of six or seven, but as late as the fourteenth or fifteenth year. In many cases where considerable movement is required in order to place the crowns of the teeth in their proper relation, the teeth immediately following such treatment stand at a decided angle, so much so that the buccal cusps of the molars and bicuspids are frequently not in contact, and in this position can be of practically no service for mastication, but if the teeth be properly retained their roots gradually assume their nearly vertical direction, and within a year or two the buccal cusps are once more in occlusion and ready for better service than ever before.



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Carmichael Crown-Post Attachment and Application of the Davis Crown.

By J. P. CARMICHAEL, D.D.S., Milwaukee, Wis.

Many varieties of artificial porcelain crowns have been devised, but little or no improvement has been made in the manner of attaching them to the root. I wish to show here a preparation of the root and a perfect fitting root attachment which when seen furnishes its own arguments, and when applied to the Davis crown gives as beautiful, strong and perfect an operation as can be accomplished.

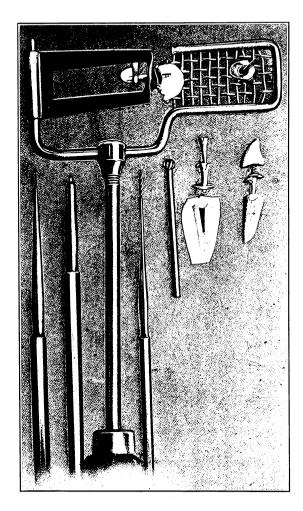
In the application of the crown-post attachment it will be seen at once that it can be applied to a badly decayed condition of the root with equal ease and less time than other methods. The gum is not involved in the operation of making a fitting to the root, therefore the result is a crown flush with the edges of the root, and with the surrounding conditions as nature provided they should be.

The post is so shaped and rolled as to be easily adapted to the form of the root, and will permit the solder to flow thoroughly through the coil. The head of the post is so divided that the flanges may be turned down with the crimping instrument without closing the hollow of the post.

The posts are made of a soft, pliable metal that will not tarnish when heated and will stand sufficient heat to be soldered with any karat of gold solder in the market.



The root is prepared by beveling to the gum as shown in illustration: Counter-sink to half the depth of bur, shown in cut, and enlarge root canal for as large a post as the root will permit, leaving no under-



cuts; place platinum post in root, enlarge same to root canal and with the crimping instrument turn the end out into the counter-sink.

Place a sheet of 1/400 platinum over the end of the root, punch a three-cornered hole, and with the crimping instrument turn the platinum plate into the counter-sink, then use a Platoria post which has been moistened and dipped in powdered 22 k. solder, telescoping the first,



which is turned into the counter-sink, thus pinioning the platinum cap firmly in position between the crimped ends of the two posts.

The whole is then closely burnished to the end of the root or may be swedged with rubber to the form of the end of the root. If the root canal is large, a third post may be used in the same manner as the second.

Before removing, pass a small steel broach through the end of the post; this opening will permit the solder to flow more readily to the end of the post.

The entire fitting is then removed with the screw extractor. If the post and cap become separated in removing from root, stick the parts together by flowing hard wax into the posts, and while warm place upon the root to get the parts in proper position again and trim the platinum cap to the shape of the root.

Remove and place the same in the wire screen of the soldering device, place a drop of the anti-flux preparation on the screen for a bed, and pass the post through it. The cap is imbedded in same, and when heated this will hold the parts in perfect position.

Set a common pin in the post extending out far enough to be used in removing the attachment after replacing it upon the root.

Use the solder in long sticks as shown in figure, which enables you to force the flow into the posts, thus insuring a thorough filling of the post with solder.

The attachment is then placed upon the root and the edges of the platinum cap burnished to a close contact with the root.

After stiffening the post with solder, never use a mallet to drive the post except it be lightly and with an orangewood stick as a driver.

Replace the finished attachment upon the root preparatory to adjusting the crown; select a Davis crown and grind same to its position upon the root.

To prepare the Davis crown-post for this attachment cut off the post that is made for the crown at the collar of same. Form a thin platinum plate about 1/400 thickness to the base or counter-sunk portion of the crown.

These two parts are fitted and soldered in the usual manner, and the crown is then waxed to the attachment in its position upon the root in the mouth which obviates the necessity of taking an impression.

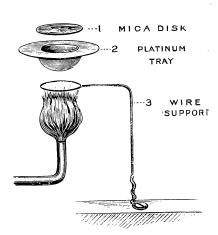
The wax will remain soft long enough to replace the attachment and adjust the crown. Should the wax harden before the crown is satisfactorily adjusted, touch the wax with a heated instrument; when the tooth is in position cool the wax with water and remove from root.



Place the piece of work in the soldering device as shown in figure; put a little daub of investment compound upon the bed of the soldering device and turn the post holder down upon it until the porcelain crown-post becomes embedded in same; also put a drop of investment compound over the post to protect it from the extreme heat. Do not attempt to remove the wax, but burn it out; it will act as a good flux. If there are any places you fear the solder will go, then paste it over with a little of the anti-flux.

If the crown is to be completed from an impression, the post can be dipped in a little hot wax before running the model. Hold the instrument in the Bunsen flame and use the blowpipe at the same time; with the soldering instrument in your hand you will find it an easy matter to flow the solder to any place desired.

In bridge work, complete the soldering of the crowns before taking impression.



A Simple Device for Fusing Low heat Porcelain.

By Dr. J. Allen Johnson, Middletown, Del.

As many of our profession are located where the electric current is not available, the use of gas or gasoline for the fusing of porcelain bodies becomes a necessity. It is for the special benefit of that portion of the dental profession that I will present a method whereby the use of low fusing porcelain is simplified. In my own practice I only use the electric furnace for high fusing bodies.



Using I/1000 matrix platinum, conform it to approximate the form of a straw hat having a conical crown. The crown diameter equal to a No. 18 disk, with a depth of 3/8 inch. A mica disk of size sufficient to cover the crown opening completes the oven part of the device. A support is made of thin iron wire and attached to work bench as shown in the illustration.

The tray should be readily removable from the support. This size of tray is large enough for any filling, and no investment need be used excepting for large contour fillings.

The mica disk excludes all gases from the blowpipe and, so far as I have observed, the results are equally as satisfactory as could be obtained with more elaborate outfits. The cost of construction is trifling, and good work may be done in less time than where the electric furnace is used.

Gutta-Percha Cape for the humane Wedging of Ceeth.

By R. Ottolengui, M.D.S.

As long as the wedging of teeth remains a necessity in dental practice, it will be our paramount duty to accomplish it with as little pain as possible. All dentists know that though effective, both the rubber and the wooden wedge are painful in the extreme, and very often harmful as well. Ordinary tape, or whisps of cotton, are not so painful, but neither are they very effective. The steel separator is a barbarous measure at best. A dentist might inflict it upon a patient but would never endure it himself.

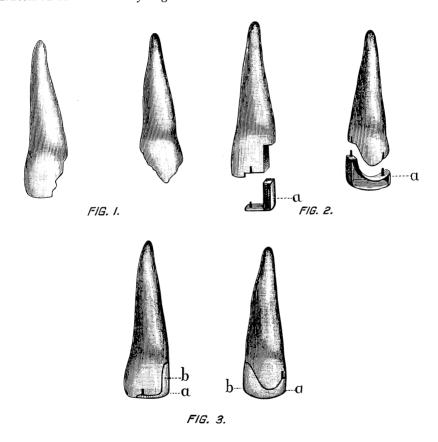
Some fifteen years ago Dr. C. Frank Bliven, of Worcester, Mass., gave me a piece of tape steeped with gutta-percha, and told me to try it for separating teeth. I did, and was sorry when it was used up, but I did not like to ask for more. After a while, however, I wrote a letter to Dr. Bliven about four pages long, and added a postscript to this effect: "I wish I had some humane tape." Needless to say the letter was but an excuse for the postscript. This little trick was repeated at intervals as often as I dared, but I have always felt like a beggar, yet continued to beg because it was in behalf of my patients. Why can not some one place this on the market?



Combination Gold and Porcelain Inlay.

By Dr. A. P. Johnstone, Anderson, S. C.

A lad thirteen years of age met with an accident which fractured two of his front teeth: left central and lateral incisors. These teeth were fractured as indicated by Fig. 1.



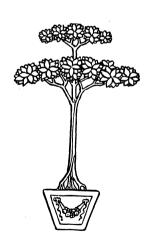
Pulps were not exposed, neither were the teeth decayed. The question with me was how to restore the corners of these two teeth and yet not destroy nor expose the pulps. At the age of thirteen I do not consider it advisable to destroy pulps if it is possible to avoid it. In this case, had I excavated much I would either have exposed the pulps or have encroached so near them that they would have died by thermal shock.

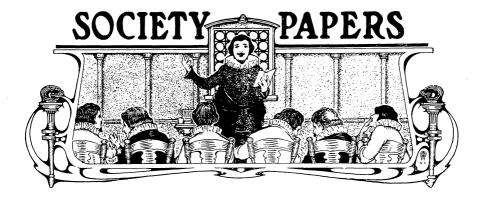


Porcelain tips or corners would not in my judgment and experience have withstood the masticating stress.

Solid gold inlay corners would have been strong enough, but very unsightly, and therefore to be avoided. Jacket crowns would in my judgment have been impracticable. So after giving the case considerable study, I determined to treat in the following manner. With suitable disks the walls of the teeth were ground, as shown in Fig. 2, and hollow gold inlays were made and cemented to place; then a porcelain inlay made to fit the labial opening in each gold inlay. This gold inlay is better described as a box, the lingual side of the inlay is gold and made to occlude with the lower teeth.

I was very well pleased with the operation when completed. I obtained almost the strength of a solid gold inlay and nearly the beauty of a porcelain inlay. I may add that one could use "Ascher's Cement" instead of porcelain, if this cement proves as good as promised by the manufacturers. These two teeth have been very satisfactory up to date, and from all indications will prove quite a creditable operation as to service.





Evolution in Dental Practice.

By B. Holly Smith, M.D., D.D.S., Baltimore, Md. Read before the New Jersey State Dental Society.

It is hard to justly estimate the importance of the events of to-day without instituting some comparison between them and the events of yesterday. "The child is father of the man." Anything, which we regard as mature and in full fruitage now, must have developed from seeds sown in the long ago, nurtured by those who have preceded. I have not reached the reminiscent age, nor does my memory of methods of dental practice go back as far as some, but I yield to no man in my interest in, and veneration for the past. Hence I have thought it might be in a sense a fulfillment of my promise to read a paper before your association, if I should talk with you about the changes which have occurred in the methods and teaching of dentistry in the last quarter of a century.

Cement as a Filling Material.

I recall at some of the clinics during my student days, lengthy discussions as to the relative merits of oxyphosphate and oxychlorid of zinc as filling materials; and it is easily remembered that neither of

these materials, as then prepared, gave any promise of permanency, while it is no uncommon thing to find to-day a cement filling, which has preserved its integrity for five or six years, comparing not unfavorably with gold or amalgam in durability.

It was about this time that the advocates of the "New Departure" were holding forth from every platform and in every publication. Many of us remember the wonderful sallies of wit and eloquence, which poured torrent-like from the now silent lips of that dear old advocate, Dr. J.



Foster Flagg. His greatness and cleverness seem all the more evident to us now, since we know the weakness of his position, and that in spite of it he usually had the audience with him. The weakness of the arguments of the New Departurists was caused chiefly by the absence of any filling material, which with ordinary care produced esthetic effect and anything like permanent repair. Who can say with the discovery of a material possessing the desired virtues how many of us will join the army of those, who taboo gold as a filling material?

May we not ask the question right here—for you to answer—"Is Ascher's Artificial Enamel such a material?" It is certainly possible to mix it so as to exactly match the shade of any tooth; and from my observation it gives greater promise of permanency than any material, which could be employed by the same methods. Certainly, Ascher's is not the last word on the subject. He himself, if not others, will probably improve upon the material now being furnished; and it requires little stretch of the imagination to see the teaching and practice of the last few years (already greatly modified by the introduction of porcelain work) fall into disuse and abandonment.

Who, that recalls the large school of skilled operators who grew up around Varney and Webb,

can find in the same locality so many whose practice has not been greatly modified in recent years? It is true we still have the G. V. Black Dental Club, a body of skillful and well-trained operators; but if anything should happen to Wedelstaedt, it is dollars to doughnuts that they would disperse. The pages and reams that have been written upon "Composite cavities in the incisal region" and their preparation for gold fillings, seem to-day antiquated reading. Indeed, as a teacher, I can not help but feel foolish, when I take up this subject for treatment. I feel that I must teach the use of gold in this locality, but I am conscious that the practice has fallen into disuse, and that the rule is almost universal to show no gold in the incisal region.

Even if for utilitarian reasons consent is given for some display of gold, it is more frequently gold inlay, and not gold foil, introduced piece by piece into a cavity prepared with infinite pains for its reception. We have all labored over the proper bevel of enamel walls, extension for safety and the anchorage suitable alone for cohesive gold fillings.

Gold Fillings.

What is the meaning of this evolution? Have we become more esthetic? Is it because our patients demand it? Has our observation convinced us that major operations in the incisal region with cohesive gold have not proved as desirable as we had hoped? Has not ten or twelve years developed a dark line here or a chipped segment of enamel there? And then has the porcelain which we substituted given



us entirely satisfactory results? These are questions which I want you to answer. It is quite evident to me that there is a strong disposition among many operators to resort to the entire porcelain facing. Our ingenuity, our skill, has stood us in stead for a time, but here we are face to face with the fact, that to-day we are more frequently resorting to radical operations, which we formerly postponed, until the last effort had been expended in other directions. What is to be the effect upon the coming dental operator? Can you find to-day among the younger practitioners any Maynards or Cockerilles? Have not such beautiful operations as these men turned out daily with non-cohesive gold become to many of us a memory only? And now how often upon our list of clinics do we see attempted such operations as Webb or Varney did? We have instead major porcelain inlays or tips or facings displayed in infinite variety. Is this progression or retrogression, or do I misstate the facts?

Orthodontia. It is not alone in the domain of operative dentistry that marked changes in methods are to be noted. In orthodontia the teachings of men like Case have produced a profound impression, and the rules of selection of bicuspids for extraction are no longer guides of any significance, arch expansion and restoration of contour without extraction being a more uniform practice.

Bonwill, in his advocacy of gutta-percha in cavities between the temporary molars to prevent the coming forward of the first permanent molar, struck a chord which has been played on effectively by Bogue and others, until most of us are in accord with the theory that the forward migration of the "Principal Molar" is a most prolific source of irregularity, and our efforts are employed to prevent or correct this condition.

Again, in the field of bridgework, the old-fashioned Low crown and Richmond bridge, used as a permanent fixture, has waned in popularity and in most extensive cases has given place to removable bridges with their cushions and attachments.

Gold inlays have been substituted for bands and collars. The changes in this line of practice have tended to develop a high grade of technical skill, and we are to be congratulated upon the distinct advance which they mark.

American Dentistry. In the substitution of plastic materials and methods for gold and the skill required for its use, on the contrary, we retrograde in technique. With the passing of gold as a filling material, American

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dentistry will have suffered a loss of that which has heretofore done much to make it distinctive, and will have undertaken methods, which may be characterized as European. With the abandonment of our former practice must come the loss of a quality, which has been largely developed by the act of building. Construction has made the dentist resourceful. This he will lose when he ceases to construct. He will degenerate into a skillful plasterer. Possibly, his laboratory technique may improve, his skill with the blowpipe and furnace will increase, but he certainly will lose something, which we have had a pride in his possessing.

But what about the patient's standpoint? Unquestionably the patient will hail with joy the short instead of the protracted sitting; the time spent in the adjustment of an inlay rather than the much longer operation of constructing a contour filling. The patient to-day is demanding that his incisal region shall be as free from display of gold as are the patients of Dr. So and So. From what I know, the patient may cast the deciding vote in favor of inlays and plastics. Certainly we do not get on so well when we do not please them.

I notice in the list of four papers selected to be read at the Jamestown Dental Convention the title of one—"Is the Cement Filling of the Future?" and of another—"Gold Inlays." Is this significant?

If these are facts they must surely influence the teaching of dental methods, and it is time somebody said so. If we are aimlessly drifting out of skillful and useful practices, it is time a halt was called. "Come now, let us reason together," and decide these points, and stick a few pegs for guidance of those who come after us. I like occasionally to go over the boundary of my little farm, and see if the old trees, mentioned in the deed of transfer, are still there; if the stones described as placed so many feet from these trees and marking the limits of possession are in place. I also like to estimate whether the value of the enclosure has been added to or diminished. So to-day I want you to show me whether I am carrying dead wood that should be lopped off, or whether my adoption of new and more popular practices has been in the nature of a healthy growth, that will be useful in the coming years.





The Peridental Membrane.

By Dr. Geo. W. Cupit, Philadelphia, Pa.

Read before the Southern Dental Society of New Jersey, October, 1906.

The peridental membrane is the fibro-vascular ligament or sheath surrounding the entire root of the tooth, and is the membrane by which the root is attached to the bony wall—the alveolar process—which in turn is a temporary structure of bone projected upon the maxillary bones encasing the roots of all the teeth. This latter is but temporary, and while resembling true bone is much more vascular, cancellated and less dense, having for its function that of supporting the teeth and, when the latter are lost, is soon absorbed, owing to a complete loss of its function. The peridental membrane is placed between this process and the roots of the teeth. It is a formation from the rather embryonic structure about the developing tooth, evolved from the follicular wall inside of which tooth calcification and formation go slowly on.

As the end of the process of calcification draws near, the embryonic structure, of a loose cellular nature and very vascular, undergoes a change in its morphology, the cells becoming specialized into fibrous cells, endothelial cells, nerve cells, etc., the first of which predominate, and tissue of the nature of a ligament soon develops, surrounding the now forming tooth.

With the completed deposition of dentin and complete formation of the tooth with its roots, the peridental membrane, now established as a regular functionating structure or organ, assumes its first or original duty as a tooth-forming body; and certain cells of its structure, known as osteoblasts or bone producing cells, begin the deposition of calcoglobulin for the formation of the last part of tooth structure to be calcified—that of the cementum or bone-covering of the roots. This cementum is a sheath of bony substance, the softest of the three calcareous structures of the tooth; the enamel the first and hardest, and most beautiful of all organic tissues; the dentin, the second, which forms the body and greater portion of the tooth, giving the tooth general form; and the cementum, the last, or sheath upon the roots and covering the dentin of these portions of the tooth, is for the specific purpose of giving attachment of the tooth to the jaw. In the deposition of the cementum and its calcification, the very cells which deposit the cementsubstance, together with the fibrous cells of the pericementum, are caught in the process and are calcified with the cementum and in its substance. thus giving upon the tooth side of this membrane the strongest possible attachment to the tooth.



It thus becomes one of the structures of the tooth and is always a part of the tooth, coming away with it in its extraction.

The Peridental Membrane.

The peridental membrane is in truth a double membrane having this strong ligamentous attachment on the tooth-side, but resembling more closely the peristeum on the side toward the alveolar proc-

ess; upon this side it is, in fact, a true periosteum, giving support to the tooth and attachment to the alveolar bone and at the same time partly nourishing the alveolar bone which it covers.

From its position, the peridental membrane is liable to injury in many ways. One of its functions is to resist the strain put upon a tooth in the process of mastication, and if undue pressure or sudden force in biting upon a hard substance is made, it must result in injury to the peridental membrane, setting up inflammatory action and often causing serious disturbance in this organ.

Blows, fracture of a tooth, careless use of the teeth, abuse, etc., are some of the causes of injury to the membrane. These being traumatic, may cause only an active inflammation, from which recovery may soon take place. If, however, congestion results and degeneration of the blood so congested, and infection occurs, a suppurative and destructive inflammation follows, and in addition to excessive pain and suffering in such cases, complete loss of the membrane by abscess, and sometimes of the tooth, in consequence follows.

The pericementum is very susceptible to infection and the degenerating processes resulting therefrom in teeth affected with caries encroaching upon the tooth-pulp and where putrescence of the pulp has resulted from exposure and death of that organ. Highly infectious matter is passed or forced through the apical foramen of the root out into the apical space and into and upon the peridental membrane at the apex of the tooth. This is the usual cause of abscess. The infective inflammation attacks the membrane, and being confined as it is in its narrow space between the root of the tooth and bony process, exudations cause intense pain, excruciating in severity, and relief comes only when the exudations and infection have reached the soft tissues of the gums, the lips and the cheek.

Etiology of Pericemental Disease.

The most common cause of inflammation and the degenerative processes of the pericementum is the accumulation of food particles, calculus, and other waste products about the necks of teeth, giving rise to irritation of the gingival or gum-margins,

inflaming the latter, causing congestion of the gums; the result of this



congestion is a retarded circulation in the gum tissue, the degeneration of the blood and the formation of serumal deposits, the accumulation of the urates of lime and soda and the calcareous degeneration of the blood. These in turn are violent irritants to the soft tissues, which increase the inflammatory action and institute a progressive degeneration of the gums, periosteum, peridental membrane and the alveolar process.

Blood in a state of degeneration becomes decidedly acid in reaction, is irritating and causes sensitiveness and decalcification of the Hypertrophy, hyperemia and inflammation ensue and tooth surfaces. a general degenerative and destructive action of the surrounding tissues takes place, with recession of the gums, alveolar process and the pericementum. Infection of the destroyed tissue naturally occurs, an accumulation of waste products attends the whole process and an offensive and infective purulent discharge is noticeable, which contaminates the food pabulum and unfits it for nutrition. The teeth so affected become loose from a breaking up of their attachment and sore from irritation and loss of function which attends not only the affected teeth, but others in their vicinity, and sometimes of all the teeth on this side of both jaws. and mastication by them is impossible. Further destruction of tissue surrounding the teeth results from this loss of function and systemic disorders and often derangement of the entire alimentary tract, so that a literal poisoning of the system follows in consequence of the pyorrhea. Unless decided measures are taken to correct the condition, the teeth will soon loosen and come out, or from the pain and discomfort resulting from the looseness, are from necessity extracted. And strange as the statement may seem, by far the greater number of teeth lost are lost from this insidious and progressive or rather retrograde metamorphosis consequent upon inflammation of the gums and peridental membrane.

Pericemental Disease Classified. Diseases of the pericementum have been wisely classified, and by no less an authority than G. V. Black, into three varieties:

Those which have their origin at the cervix or gingiva; those which begin at the apex of the root; and those which occur in the central portion of the membrane, or some intermediate part between the apex and the cervical border of the tooth.

Nearly all the cases which have their beginning at the apex are directly due to an infection (bacteria—pyogenic organisms of the pneumococcus, streptococcus, staphylococcus and the more common variety diplococcus prevail) from the decomposing and putrescent contents of the canal of the tooth following the death of the pulp.



These cases result mostly from neglect. The pulp substance, together with impacted food, undergoes decomposition and becomes highly This infection is confined within the canals and readily finds its way or is projected into the apical space, setting up an acute infection of the peridental membrane covering the apex of the tooth. Confinement again within this area leads to further progress of the disease and septic inflammation of the membrane continues, often throughout the whole organ, and an active and acute septic apical pericementitis is the condition. This is often miscalled alveolar abscess. There probably never is in the various phases of an abscessed tooth, any abscessed condition of the alveolar bone, but simply a boring through the alveolar wall by the abscess-sac by reason of the action of the giant cells upon the outer surface of this destroying membrane—the sac carrying the destroyed tissue, the dead leucocytes, destroyed cellular connective tissue bone cells and gum tissue and known as pus, toward the surface upon which it is to be discharged. Beyond this, the different stages of a developing abscess would be somewhat irrelevant to our subiect. We may, however, to advantage consider the morphology or morbid anatomy of the peridental membrane during the progress of the disease which has its origin at the apical end of the tooth-root. Infection from the canal finds its way into the tissues of the pericementum. Abundant exudations of a fibrinous and coagulable nature pour out into the intercellular spaces of the membrane; the tissue softens and swells about the apex, and exudations of blood cells and leucocytes take place: proliferation of the cells of its tissue ensues, and the tooth, by reason of a thickening of the pericementum, is pushed slightly from its socket. With this pathology the nerve cells of the membrane become highly sensitive-hypersensitive-and from pressure by the hyperemic vessels and the exudations, pain attends its first symptoms. With an extension of the inflammatory condition radiating from the focus of infection throughout the whole membrane, pain and pressure increase until in the more advanced stages the slightest percussion or pressure upon the tooth affected becomes unbearable.

Great destruction of cellular tissue, of soft and bony structures, and of the leucocytes takes place and its accumulation, on confinement within a developing sac wall (which is a process of demarcation from normal surrounding tissue), leads to its escape along the path of least resistance and the condition is known as abscess.

The cases which have their origin in the body or central portion of the pericementum are comparatively few and are not so important. In nearly all cases they are due to a form of infection which reaches the



membrane by way of the general circulation. Infective matter is carried directly to the vessels of this organ and a septic inflammation follows. Or by reason of injuries to the membrane by force or blows, or the too sudden strain upon it by suddenly biting upon hard substances, causes an engorgement of the vessels or even rupture, and the effusions resulting undergo a degeneration, and an infective inflammation is the consequence. Phagadenic pericementitis is induced from such causes, the process being a slow degenerative one; a microbiotic action with slow degeneration of an area or of different areas of the membrane.

This has been given the name of phagadenic pericementitis, or an eating away of the membrane by a very low chronic form of inflammation. In other words, it is the slow passing away of the life of this organ.

The cases which originate at the cervix or gingival margin are more common than any of the other classes and should interest and concern the operator probably more than any branch of his work. one reason principally they are important. The duties of the operator are mainly the conservation and preservation of the natural teeth. of his work should tend toward this end. In proportion as he is able to preserve the natural teeth in their various relations and functions, just so in proportion is he successful or unsuccessful. Now since we have learned that more teeth by far are lost through diseased condition of the gingival and the peridental membrane, if the operator is to be successful or most successful he will give that department most attention which is most prolific in the destruction of the teeth. It has been said by our learned Dr. Talbot "that if you take care of gingivitis you will have no pyorrhea." Let me add here that the term pyorrhea is not the name of a specific disease which we find destroys so many teeth, but one of the stages or phases of an inflammatory condition which begins with hyperemia at the gingival border, and ends with total destruction of the gum and its attachment, the alveolar process and pericemental attachment and the loss of the tooth itself. Just as suppuration is a part of the phenomenon we call inflammation (as is also the earliest hyperemia) so is pyorrhea (or the flowing of pus) a phase of the inflammatory action which destroys the teeth.

Then to return to the quotation of Dr. Talbot, stop the hyperemia and you avoid the suppuration; or, as he gives it, "stop the gingivitis and you have no pyorrhea." Or to put it more simply still, stop the condition at the beginning and you have no progression. Is it not true of all things? It is the proverbial "Stitch in time."

With scarcely an exception these cases or this class of cases begin-



ning at the gingiva are the direct result of neglect. Why is it that the mouth, which should be virtually the cleanest part of our whole anatomy, is in reality the filthiest? It is so only from the fact that it is most neglected even in this present day of advanced systems of hygiene. We strain at gnats and swallow camels.

The phenomenon is as follows:—Mucous patches or accumulations upon the teeth, in various stages of decomposition and infection, irritate the gums at their margins. These become hyperemic. A gingivitis results progressive in its nature, with a continuation of the causes of its irritation. Exfoliation of gum tissue, hypertrophy, follows. Congestion of the vessels of this tissue and exudations are the result of continued irritation, which like the condition itself is progressive. With a profound congestion of the hypertrophied gums, the blood almost bursting through the surface, there naturally results a decomposition of this excess of blood, a decided acid reaction in its generation, calcareous in its nature, with the formation of the urates of lime and soda.

These and other irritating salts are deposited within and upon the gums and pericementum, Soon the loss of function adds its share to the destructive process and absorption of gum tissue, alevolar process and pericementum, or probably a wasting away of these, leaves the teeth loose, without support, and withal so irritated and painful that relief is had in their falling out or in extraction. These changes are the direct result of a lack of oral hygiene and are the usual pathological changes we might look for from such cause.

There are also certain traumatic causes which are apt to induce similar conditions, locally but rarely general. The common causes are use of arsenical agents for devitalization; the passage into

the apical space of an irritating drug used in medication; forcing of root filling materials of various kinds through the apical foramen; pieces of root reamers or drills or broaches used carelessly in canals; drilling through the lateral aspect of a root; very rapid wedging for spacing, or tooth movement in regulating cases; ligatures or clamps injudiciously applied or retained; too heavy or excessive malleting in building up large gold fillings; or the biting of too hard substances as nuts, pieces of ice, thread and other things. Blows and falls affecting particular teeth are apt to cause acute pericementitis. The acute form arising from any of the foregoing causes is usually of short duration, depending upon the vitality of the patient and power to resist or offset this condition. Usually surgical rest of the tooth or teeth affected is indicated, with



local application of tincture of iodin as a counter-irritant or the use of the following for the same purpose:

Ŗ	Tinct. Aconite (rad)fl. oz. i
	Chloroformfl. oz. iv
	Mentholgr. xx

This has been found by the writer better than tincture of iodin. Capsicum in its various forms of preparation, hot applications of extract hamamelis have also been successfully used for this form of pericementitis.

The important part of this paper will be that Pericementitis.

Pericementitis.

Pericementitis.

Description which dwells upon the treatment of that class of cases which have their origin at the gingival border. Let me begin with an incipient form or almost what precedes an incipient form of gingivitis. Before the gum margin is affected there must first be an accumulation upon the tooth surface of a mucous-like accretion, which within a very short time after its accumulation, or in fact simultaneous with its accumulation, becomes infected with disease organisms. These infest the mass of accumulated mucus and soon its decomposition takes place as it lies upon the tooth-surface at the cervical margin and in contact with the gum.

This is the very first, the beginning of a phenomenon which starts with a gingivitis and ends with the loss of the tooth, wherever remedial measures are wanting. At this time the remedy will be frequent brushing and the use of an antiseptic wash. Listerin, glyco-thymolin, mild solution of zinc, sodium, or camphor phenate, or any form of the astringent and antiseptic solutions, many of which we are not all familiar with.

As the disease progresses from its being neglected, more stringent measures will be necessary to overcome it. When congestion of blood with partial decomposition, and hypertrophy of gum tissue exists, laceration for depleting the gums of the excess of blood and scaling of the tooth surfaces and careful examination of all cervical borders to discover if possible any accretion of calcareous matter beneath the gum margin, must be thoroughly done. There is usually in gingivitis a collection of greenish black calculus, circling the neck of the tooth just under the gum margin. You will be surprised to find how often this occurs. Mechanical removal is first indicated, followed by an application of Veo's remedy (which consists largely of trichloracetic acid), or the application of the acid itself, applied with the aid of a thin, long-pointed orangewood stick and passed as far as possible under the free gum margin, even at the expense of detaching slightly the gum from

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the tooth. This must be followed by the careful and vigorous brushing three times a day by the patient, whose thought and interest should be aroused to the necessity for careful and constant attention to prevent a certain progress of the disease if it is neglected.

A little farther on in the progress of this disease, we meet a condition where the gums are engorged with blood, exfoliation and hypertrophy of gum tissue is seen; they are sensitive and bleed at the gentlest brushing; the tooth surfaces are sensitive, especially close to the gum margins; the gums are full, loose and almost flabby in the interspaces, and often for a considerable distance are unattached. These loose flaps may be lifted up or away from the teeth and beneath is found a collar or ridge of calcareous deposit of considerable thickness and very hard, dark in color, and which is with considerable difficulty detached from the tooth surface, which has reached practically up to the pericementum. In other words, it has reached the cervical portion of this membrane.

A pericementitis is associated with a profound gingivitis. fect upon the membrane is such as to produce disease of a greater part of the organ and soreness upon biting, pain upon percussion, partial looseness of the tooth or teeth in such stage, for it has spread to some extent and may now involve any number of the adjoining teeth. The treatment will be more difficult with the further progress of the disease. Pockets have begun to form beneath the gum margin, showing that it has affected much more of the pericementum, also the alveolar process, causing atrophy of these tissues, and in the spaces and depressions thus formed the debris of the mouth finds lodgment. Infection is now rampant! The disease from a dental standpoint is dangerous and malignant. Tissues and organs are being rapidly destroyed. The treatment now becomes even more The destructive process must be checked. longer keep pace with the destruction of tissue. Science and mechanical skill are brought into play and by curetting and laceration we remove all diseased tissue. The scaling of calcareous matter must be most thoroughly done. Instruments for this purpose must be so shaped that every portion and angle may be reached. The process of scaling in this stage becomes very tedious and trying. But "Eternal vigilance is the price of success." Every particle must come off and the tooth surface be thoroughly polished afterward. The deposit is of a serumal character, being without doubt a calcareous degeneration of the blood. a violent irritant to the soft tissues and must be removed and its further accumulation prevented. The pericementum, too, is in such a state of inflammation and degeneration that it is being rapidly destroyed. teeth now affected become loose, long and sore, and necessarily lose their



function. All the tissues show less resistive powers and succumb to the pathological condition. We get rid of the great excess of blood in the scaling process and in place of a great quantity of degenerating blood which has lost its nutritive power and become even a source of irritation from loss of its oxygen and also its alkalinity, we have a normal quantity of new life-giving blood and the sensation is one of stimulation.

Following the scaling, astringent and stimulating remedies are applied freely to the soft tissues, and a healthy reaction soon sets in; and when the treatment is repeated a number of times associated with proper hygienic and prophylactic measures, the results are astonishing and gratifying.

For astringent action we use freely tinct. iodin, and also a mixture of equal parts of tinctures of aconite and iodin; solution of quercus alba (white oak bark) for the physiological action of the tannin; and the aforementioned zinc solutions. For stimulation, solutions of five per cent. carbolic acid; also a solution of equal parts gum camphor, carbolic acid, oil wintergreen and water, carefully mixed and used as a massaging solution. This last preparation is very beneficial and interesting. Camphor is a decided stimulant, a cardiac stimulant, and no doubt has similar effect upon the vessels themselves, in local application, elevating the arterial tension. Carbolic acid and gaultheria, while they are homologous, have somewhat different effects, or distinctive effects. Both are classed with the antiseptics, and, properly speaking, belong there, but we find that carbolic acid is stimulating to a considerable extent, and gaultheria, while antiseptic, acts as an obtundant and analgesic, both this and carbolic acid as well as thymol producing a paralysis of the end organs of the sensory nerves.

To get the best effects of this combination it should be accompanied with massaging of the gums for five or ten minutes at each sitting for the treatment. The results will be evident in the return of the normal color to the gums, a light rose pink, in place of red or the purple of congestion, and a feeling of stimulation, of returning vitality and strength to the tissues of the mouth and teeth. The treatment for this insidious disease must be continued with inexhaustible patience and determination to check it. The effects of successful treatment are a transformation and a revelation, are always gratifying and of incalculable value to the patient who will have retained the natural organs of mastication and a condition of health, for this reason, far better than he would otherwise enjoy; an appearance of the mouth and teeth which is inviting and attractive, instead of repulsive and offensive. The operator will have been a benefactor to the race, "having made two blades of grass grow where only one grew before," in his having recovered from loss these organs, the



well-being of which is so dear to every conscientious dentist and so necessary to the health and comfort of us all.

Some Reasons Why Fillings Fail.

By J. V. Conzett, D.D.S., Dubuque, Iowa.

Read before the Second District Dental Society, May, 1906.

In order to have an intelligent comprehension of the subject of the failure of fillings through a recurrence of decay, we must first know something about the cause of caries of the teeth. We believe that the decay of teeth is not caused by an inherent weakness of the tooth structure, that the old idea that there are hard teeth and soft teeth is a fallacy. We believe that the cause of tooth decay is an invasion of the dental organs by organisms that have the power of disintegrating tooth structure. We also believe that these organisms begin their work of destruction by adhering to the tooth in some place that is not reached by the tooth-brush nor by the food in its excursions over the teeth in mastication, such places being the approximal surfaces of all the teeth, the gingival third of all teeth and pits and fissures on the occlusal surfaces. These places may be called areas of susceptibility. We also believe that there are certain areas upon all teeth in which primary caries never occurs. Such areas are the plane surfaces of the teeth that are kept clean by the excursion of food in mastication and are easily accessible to the tooth-brush. Such surfaces are the middle and incisal two-thirds of the labial surfaces of incisors and cuspids, the middle and occlusal two-thirds of molars and bicuspids, the cusps of molars and bicuspids and the incisal surfaces of incisors and cuspids. These places we may call the areas of immunity.

Extension for Prevention.

In the vast majority of the failures that come to us through a recurrence of decay we will find that the reason for the failure is an insufficient extension of the margins of the cavity into the areas of

immunity. This is the doctrine of extension for prevention. I make no apologies for bringing it into this paper; nor for giving it the first place, for I believe that it is the most important principle in the saving of teeth



from the ravages of decay. If a patient comes to us during this stage of susceptibility and we find the beginnings of caries between many or all of the teeth, and we only cut out the small beginnings of decay, not carrying the margins of our fillings out far enough to keep them clean, we have utterly failed to change the condition that has come to us for correction and may reasonably expect a recurrence of decay around those fillings, and will surely get it unless the period of susceptibility passes off.

Nature is very kind to us and many fillings that are not scientifically correct last many years, because after we have filled the teeth the period of susceptibility passes off, for which reason the teeth do not decay. But there comes a day, it may be in six months, it may be in ten years, in which there is a recurrence of susceptibility and our patient returns with secondary decay around all of these fillings and we wonder why. The reason is evident. If the margins had been sufficiently extended into the areas of immunity, then when the period of susceptibility returned, the organisms of decay would not have been able to attach themselves to the surface of the tooth and it would have been safe. The rule should be to carry the margins of the cavity gingivally so far that it will be covered by healthy gum tissue; buccally, labially and lingually so far that the margins are perfectly free from contact with the approximating tooth, and occlusally so far that it will be kept clean by mastication. we do this and the filling is so made that it hermetically seals the cavity, we will never have a recurrence of decay.

In the discussion of a paper which I wrote upon this subject some years ago, a gentleman of prominence in the profession took issue with me upon this subject, but after some discussion he seemed to be convinced with the reasonableness of our position and said: "I remember many cases in my practice in which I simply cut out the decay upon the approximal surface of a tooth and filled it, and in a short time would find a recurrence of decay around the filling; would cut that out and refill, only to find a recurrence again, and I might repeat the operation four or five times and then would have no more trouble. I thought, heretofore, that there was no further trouble because we had arrived at a period of immunity. I now see that the reason why the decay was arrested was that by reason of the repeated cutting I had finally reached immune territory with the margins of my fillings."

I can testify to as many failures as any man in the profession through a recurrence of decay around my fillings, but in the last seven years, or since I have adopted this principle in my cavity preparation, I never expect to find a recurrence of decay around my fillings, and I am rarely disappointed.



Faulty Gold Fillings.

Another reason why many failures come to us through recurrent caries is because the cavity has not been hermetically sealed with the filling material. We find these cases with all classes of filling the Level confine myself to the discussion of these

materials, but to-night I shall confine myself to the discussion of those failures occurring when gold has been the material used.

During the past few years there have been many articles appearing in our journals in which the assertion has been made that it is impossible to make an impervious gold filling. I grant that the writers of those articles may not be able to do so, and if they will content themselves with the statement that they can not do it, we will have nothing further to say, but will draw the mantle of charity over their limitations. But when they say it can not be done, we must take issue with them, for we can do it. Almost every member of the Black and Wedelstaedt Clubs tried the experiment and in not one case was there a failure to so perfectly seal the cavity that red ink was not able to creep in between the margins though the immersion was continued for days. For a detailed statement of these experiments I must refer you to Dr. K. E. Carlson's paper in the *Dental Review* for May of this year.

Cechnique of Instrumentation.

There are two reasons for a recurrence of decay under a gold filling. First, a failure to perfectly adapt the gold to the margins of the cavity. This is caused by a faulty manipulation. The lines of

force in instrumentation have not been correct, the instrument has not been correctly stepped and the direction of the progress of the plugger point has been wrong. In making a perfect joint with gold, the point of the plugger must be held at an angle of about 45 degrees, with the wall of the cavity toward which the gold is being condensed, and the plugger should never be placed at or near that wall first and then stepped away toward the center of the cavity, but should always be first placed toward the cavity center and then stepped toward the wall, thus driving or flowing the gold before it, and the last blow should be the one that forces the gold snugly against the wall. The stepping of the plugger is the progression of the plugger in an orderly sequence of steps, each step being just a little less than the diameter of the plugger, thus shingling the gold and obtaining the greatest density and strength.

Density a Requisite. The second reason is because of a lack of density in the body of gold. We know that the specific gravity of cast gold is 19.2 degrees, and in proportion as we depart from that density we have a percen-

tage of air spaces. If that percentage of air space is very great we have



a filling that is spongy in character and consequently is absorbent. We know what happens to an absorbent material in the human mouth, and if you do not think that the same thing happens to a filling of low specific gravity, just take one and rub it between your fingers and then smell your fingers, or place it over the flame of an alcohol lamp and see the mass of putrescent material that will burn out.

Dr. Black is authority for the statement that a filling of a specific gravity lower than 14 degrees will not save the tooth, and he has worked out by a vast number of experiments the force and mallets best adapted to obtain the proper degree of density, so that I shall not enter into a discussion of that subject at this time, farther than to direct you to his article in the *Dental Cosmos* for 1895 on the "Physical Characteristics of Gold," if you wish to follow up the subject.

Fand Mallet and

We use the hand mallet in the hands of a trained assistant and the mallet force is augmented by a hand pressure. We aim to employ a hand pressure of from ten to fifteen pounds and a mallet blow

of about the same so that the force per blow is between 25 and 30 pounds. This of course must vary according to the position of the filling, the strength of the tooth and the condition of the peridental membrane. As in every operation there must first be a careful study of conditions and then an intelligent effort to correct the condition, and the best means to correct any condition must be employed. There are certain teeth in which a filling of 15 to 16 specific gravity will be the best to employ because the muscles of mastication are not strong, the stress upon the teeth is never great and the peridental membrane would not withstand the necessary strain of inserting a filling of high specific gravity. On the other hand, there are cases in which fillings of the very highest density are demanded. These cases are fillings upon the occlusal and approximoocclusal surfaces of bicuspids and molars in mouths of individuals having masticatory muscles of great strength. In these cases, because of the great stress that is brought to bear upon the teeth in mastication, the peridental membrane is very strong and resistant, and the force of the mallet is not felt at all.

We believe that definite methods produce definite results, so in making our fillings we use pellets of gold of exact size, so that we know the exact quantity of gold under our plugger point at any given time, and we use a definite number of blows of the mallet upon each pellet. For example, we prepare our gold in pellets of I-64, I-32, I-I6, and I-8 of a sheet, and to a I-64 sheet pellet we give 20 blows of the mallet; a I-32 40 blows; I-I6 80 blows, and a I-8 pellet I60 blows of the mallet. In



this way we know that the density of our fillings closely approximates the results that we have obtained in the laboratory under conditions as nearly the same as possible. These results have been verified by fillings that have been made in the tooth and afterward tested for its density. It is a frequent occurrence to have a patient present with a gold filling that has failed, and find that the filling is of so low a density that it can be picked out piece by piece with an excavator, the whole filling having disintegrated. This is not because there was no cohesion of the particles of gold when the filling was made, but because, by reason of its lack of density and its great proportion of air spaces, the filling was so absorbent that moisture penetrated the interstices of the filling, breaking up the cohesion and causing the disintegration.

We occasionally find men who claim that they can make perfect fillings by hand pressure. It may be so; far be it from me to say what one man can do or can not do. We know that Dr. McKellops used a hand pressure of 36 pounds regularly in his operations, but of the thousands of men whose hand pressure power Dr. Black has examined with his manudynamometer, no one except Dr. McKellops has ever gone over 30 pounds, and very, very few have reached that. If I mistake not, no one but Dr. Black, while the average is ten or twelve. So while there may be isolated cases of ability to condense gold by hand pressure, it is certainly not safe to try it. But whatever the force used, it must be enough to so thoroughly condense the gold that it will not be porous.

Faulty Cavity Preparation.

Another cause of failure is the improper internal preparation of the cavity. We frequently find fillings that have failed in cavities that have been prepared with pits, grooves and retaining points, result-

ing in failures of various kinds. In the cavity prepared with great, deep pits running into the angles of the tooth, we often find these pits the seat of a recurrent decay through the inability of the operator to properly fill them because of their inaccessibility to the plugger point, resulting in a deep pit with little or no filling material in it. Again these pits running between the labial and lingual enamel plates near the incisal surface of an incisor so weakens that part of the tooth that under the stress of incision the angle of the tooth breaks down. The same applies to deep grooves in any surface of the tooth. In cavities in the approximal surfaces of molars and bicuspids where the cavity has been filled without involving the occlusal surface, we find very frequently a break in the enamel on the occlusal surface overlying the filling caused by a weakening of the tooth at this point and a consequent breaking under mastication. Grooves and pits should be avoided in modern cavity prep-



aration. The ideal cavity is one that is prepared with a flat seat and parallel walls. That is, as nearly box shaped as is possible. In bicuspids and molars occlusal anchorage should be practically universal in application. The only cases in which any other preparation is permissible are in those cases where the approximating tooth is missing and perfect access can be obtained from the mesial surface.

In incisors involving the angle we find frequent failures by reason of the operator attempting to restore the contour of the tooth with a preparation that involves the boring of a pit into the remaining portion of the incisal surface, the result being either that the angle of the tooth breaks down or that the filling is forced away from the tooth by the stress put upon it. The method we use is that of incisal anchorage. A method calling for the most exact and painstaking instrumentation, but one that properly carried out insures the tooth a long life of active service.

Another very frequent cause of failure, not only in gold fillings, but in fillings of all kinds, is a failure to observe the occlusion. Occlusion is one of the most important problems that presents itself to the dentist. Dr. Brady once said to the writer: "If we had the perfect orthodontist, the perfect prosthodontist and the perfect operative dentist combined in one man, we would have the perfect occlusionist." We have been accustomed to think that it is necessary for the orthodontist and prosthodontist to study occlusion, but have overlooked the fact that it is just as important for the operative dentist to do the same.

If a filling is made in a tooth in such a way that it hermetically seals the cavity, and preserves the tooth from further decay, we feel that we have fulfilled our mission. Not so, if in filling that tooth it is not so restored that it can take its place in the arch and do its share in the work of mastication. We frequently find teeth upon whose mesial and distal surfaces there has been extensive decay, so that the tooth has lost from two to six millimeters of its mesio-distal diameter. If in the filling of this tooth space is not obtained and the mesio-distal diameter of that tooth restored, that filling is a failure, even if it saves the tooth for life. Why? Because to the extent of its lost surface it has disarranged the occlusion of the entire side upon which it is situated. Again, a failure to observe the occlusion will lead us into errors of cavity preparation and gold condensation. If the occlusion is strong, the cavity must be correspondingly deep and of flat surface in order best to resist the stress brought to bear upon it. If the occlusion is weak, or entirely wanting, it would be a great error to cut as wide or as deep as if the fillings were to withstand great stress. And then again, it is not only the normal occlusion that must be observed, but the abnormal, as



well. This is sometimes extremely difficult to detect, and the most careful operator is liable to be caught napping. For instance, in a filling upon the mesio-incisal surface of an upper right lateral incisor, once I made an operation of which I was very proud, but when the patient returned in a few weeks with that filling so battered that it was scarcely recognizable, my pride had a great fall. In seeking for a cause for that failure, I found that the young man had a habit of grinding his teeth, and the sharp cusp of the lower right cuspid cut a beautiful deep and wide swath through my filling, entirely destroying it. I remade the filling, trimmed the cusp of the cuspid so that it could do no further damage, and have had no further trouble. I might cite instances enough of this kind to convince you that a study of the abnormal excursions of the teeth, either as a result of habit or of grinding the teeth at night, is of the utmost importance to the operative dentist.

I cannot attempt to enumerate all the causes of failure; such a task would be far too great in scope for one paper, but I wish to speak about one other far too common error that dentists commit, and that is a failure to properly restore the interproximal space. When a tooth decays upon its approximal surface the first tendency is to close up the space made by the ravages of decay, and the tooth moves forward upon its fellow, and in proportion to the extent of decay is the interproximal space usually destroyed. If the tooth is filled in this position, which is too often done, the space is either entirely or in part destroyed, the filling is flat with a large contact surface, instead of a contact point, and the poor patient goes through life eternally picking or trying to pick the food from between those teeth, until pyorrhea steps in as a result of irritation and ends the life history of that tooth. In filling any tooth we should in some way obtain sufficient space to properly contour the tooth, restore a proper contact point, and we will then have a natural interproximal space that will be a comfort to the patient, and that will, by reason of its allowing the healthy gum tissue to come up into that space and over our gingival margin, protect our filling from a recurrence of decay.

These, gentlemen, are a few of the causes which I have observed for the failures of our fillings. They are all errors of judgment, or of technique, and can all be overcome. As we study our failures and know the causes of them, we can more intelligently correct them. It is no crime to err once or twice, but it will surely border upon the realm of criminal carelessness to keep on making the same old failures with no attempt to correct them.



Empiricism in the Practice of Dentistry.

By Dr. W. H. Jones, Clinton, N. Y. Read before the Fifth District Dental Society.

What is empiricism? A method or methods of practice resulting from theories, observation, experience and experiments.

What is science? Methods or systems of practice which have been generalized, systematized and verified. Thus the empirical methods of the past proven and verified by experience become the accepted scientific methods of the present.

What has empiricism given to dentistry? Practically every system of treatment and material that is of value to us in our daily practice.

Amalgam, which has saved more teeth than all other filling materials combined, was subject to the most bitter and ignorant abuse by the leading men of our profession, particularly those who practiced dentistry on paper between 1840 and 1860; men who condemned the material and all who used it, and endeavored and in a few instances succeeded in having resolutions passed by various dental societies, denouncing the use of amalgam and threatening to ostracize reputable members of the profession who advocated its use.

Even during the period between 1875 and 1885—when the New Departure Corps, of which the late Dr. S. B. Palmer was a valued member, were endeavoring to reduce and collate the various methods and formulæ, and by serious and exhaustive clinical experiment reduce the same to a system, they were hailed by the Gold Bugs as quacks and charlatans, although now their findings, teachings, formulæ and methods are generally accepted as proven and verified methods of practice. The graduates of the Philadelphia Dental College and the practiced and thoughtful men of the East generally accord to the late Dr. J. Foster Flagg the honor due him for his writings and brilliant efforts in giving to the profession a series of formulæ which have never as yet been improved upon, although of late years they have been slightly modified.

Pulp Mummification. Pulp mummification is, or was, also an empirical method of treating freshly devitalized pulps which an experience of more than twelve years has proven to be of great value to the profession

and which has saved, for years of usefulness, thousands of teeth which would otherwise have been lost. So that now even the members of our profession who always fill every root to the apex,



openly advocate the use of mummyfying paste—before the introduction of the root canal filling—just to be sure.

I very seldom attempt to drill out and fill out the roots of the bicuspids and molars, but devitalize, open up the pulp chamber, then open the mouth of the root canals with Dr. J. Leon Williams triangular reamers, wipe out the same with perhydrol ten per cent., then with a solution, absolute alcohol I oz., mercury bichloride I gr., and fill the mouths of the canals and pulp chamber with mummyfying paste. The Soderburg formulæ with aristol or iodoform is used and the tooth sealed with the filling the case may require.

The various preparations containing formaldehyde are also of great value in the treatment of putrescent pulps and abscessed teeth, either with blind or open sacs, and after an experience of about six years, I take off my hat to solidified formaldehyde, properly used, and right here let me state that too much sealed in a tooth will create more trouble than any drug with which I am familiar. The secret of success is to use too little, rather than too much.

I will briefly refer to three different conditions in which the remedy may be used with surprising and pleasing results. I am citing actual cases taken from practice.

Cases from Practice, Case I. The first condition, an upper left lateral—the pulp died under a heavy gold filling; opened up the very tender tooth, washed out with tepid water, wiped out the pulp chamber with a pellet of cot-

ton moistened with perhydrol ten per cent., dried out, took a small piece of formaldehyde, smaller than a pin's head, rolled a few strands of cotton around the same so that it could be easily carried to place and sealed with temporary stopping. Sealed up a sore, aching and tender tooth and sent the patient away with an appointment a week in the future. When the patient presented, the tooth was normal to concussion, was opened up, treated and filled and patient discharged. Have treated many teeth of this type—two sittings—with invariable success.

The second condition, lower left sixth year molar—dead tooth, peridentitis or blind abscess; cleaned and partly prepared cavity, opened up pulp chamber, washed out with tepid water and wiped out with perhydrol ten per cent.—dried the chamber and placed therein a small pellet of formal-dehyde rolled up in a few strands of cotton, sealed the cavity with temporary stopping. At the next sitting found the tooth in an apparently normal condition, pulp chamber and root sweet; washed them with perhydrol ten per cent., followed by absolute alcohol and bichlorid and



filled with formapara cement. (Formula for oxpara or formapara cement.—Tricresol, 3; formalin, 1; glycerin, 1—liquid. Zinc oxid, 2; thymol pulv., 1—powder.) Of course I drilled out and enlarged the roots as best I could, using Beuel rock drills. I never use broaches. Cempleted the filling and discharged the patient.

The third condition, two lower right bicuspids —ulcerated teeth so-called—jaw swelled—patient Case TTT. lived about four miles out in the country; opened up the cavities and pulp chambers and the pus gushed from each: washed out with tepid water and wiped out with peroxide, dried and placed in each a small piece of formaldehyde as previously described; filled the cavities with base plate gutta-percha, as the patient stated that he did not know when he could come again. Six months later the patient reported; stated that the swelling soon subsided; I treated and filled the teeth. When we consider that under the accepted scientific methods of a few years past such teeth were treated sometimes for weeks and even months, we can thank empiricism for what she has done in this direction, which is fast becoming recognized as a scientific method of treatment. And let me again warn all who have not tried the method to use too little rather than too much, as formaldehyde in excess will act as a violent irritant and seems to have a cauterizing effect on the tissues.

Pressure
Anesthesia.

Pressure
Anesthesia.

Pressure
Anesthesia.

Which may not be new, yet I have never seen it published. When the tooth is prepared and the cavity rendered aseptic, I take a P. & D. pellet of cocain 1½ and adrenalin 1-600, roll a few shreds of cotton around same, moisten with local solution, place over the exposure and then instead of using rubber, fill the tooth with temporary stopping. Then apply pressure with a warm instrument toward the point of exposure. I have frequently succeeded with the stopping after I had failed with the rubber.

During the past eight years many teeth have been saved for indifferent patients, and many desirable patients have been added to our clientage by the following empirical treatment, patients who presented with teeth for extraction. The teeth had ached and the patients did not believe or did not know that any aching tooth should be saved, and the average practitioner comes in contact with many apparently intelligent people who hold this opinion until enlightened: people who at first will not spend the time or money to save their teeth. The suggestion is made that the tooth should be saved and can be saved for a nominal fee. Usually the condition is an exposed pulp, and pressure anesthesia is used, the

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bulbous portion of the pulp removed, chamber washed out with perhydrol ten per cent., and the pulp chamber filled with mummyfying paste under pressure. The tooth is filled permanently and the pleased patient sent home rejoicing.

In cases of extraction under local anesthesia, empiricism again helps out. About six years ago I lolasem. read a paper before the Fifth District Society upon the value of adrenalin chlorid as an antidote to the depressing action of cocain, and while it is now an accepted remedy and generally used in cases of shock and heart failure, in cases of extensive extraction, volasem is now used with extreme satisfaction, particularly in the difficult extraction of lower molars and wisdom teeth. The preparation is said to be composed of fluid extract violet, fluid extract strophanthus, fluid extract calabar bean or physostigmine (physostigmine is the active principle of calabar bean). The violet is evidently used to mask the extremely bitter taste and somewhat unpleasant odor of the strophanthin and physostigmine. Strophanthin is one of the most powerful of the heart stimulants and has much the same action as adrenalin, i. e., stimulates the heart and slows the pulse.

The physostigmine is also a heart stimulant and slows the pulse, at the same time acting as a cerebral depressant. Dr. G. Lenox Curtis, a former member of this society, first brought the preparation to the attention of the profession at a Union Dental Meeting held at Richmond in 1900, and to-day uses it in his practice daily. Dr. Curtis uses a saturated solution of cocain in nearly all operations, preceded by from 5 to 20 drops of volasem. For an ordinary operation 30 drops of a saturated solution is used, which means that ordinarily 10 to 15 grains of cocain is exhibited. He says, "Ten drops of volasem is usually sufficient to prevent any untoward cocain symptoms, but should they arise a dose of 5 to 10 drops is given."

In large operations Dr. Curtis has used as much as an ounce of saturated solution, safeguarded with continuous small doses of volasem.

Dr. Curtis states that he has often seen very severe toxic symptoms where volasem had not been given corrected in a very short time by its administration, and apparently dying patients restored by the same means in a few minutes.

While we in our profession seldom use more than a one per cent. solution of cocain, and seldom exhibit in extensive extractions more than a grain or grain and a half of the drug, let me state that I am perfectly satisfied that many of the cases reported as cocain poisoning are simply cases of acute nervous hysteria, and having recognized that condition



for over five years I have not been troubled or worried over cocain poisoning, although the symptoms all point in that direction.

Cocain is a cerebral excitant and gives a nervous patient an excellent opportunity to annoy the busy dentist.

In volasem we have a preparation which given in a little water before the operation, assuring the patient that it will prevent an unpleasant effect, has a powerful mental as well as physiological action. Now while I have only taken up a few of the many valuable aids empiricism has given to us, let us trust that the future may bring us many new and valuable appliances, methods and theories as have been given us in the past by Fouchard, Hunter, Townsend, Flagg, Bonwill, Barnum, Wells, Land, Richmond, Perry Younger Angle, Kingsley, Miller, Curtis, Jackson, and all the other original thinkers in our ranks.





New Jersey State Dental Society, Thirty-seventh Annual Meeting.

Discussion of Dr. Kemple's Paper.

Dr. R. Ottolengui, New York City. I had hoped, Mr. President, that you would call upon some one far more competent than I am to discuss this very excellent paper, and what I shall have to say will be very brief.

In the main, practically in its entirety, I agree, but I take issue with the essayist when he speaks of nasal obstruction producing a narrowing of the upper jaw. I do not believe that is a correct statement. I am ready to concede that any such obstruction, and consequent mouth breathing, may produce a narrow upper arch, but it produces it by keeping it narrow, by preventing development; it does not narrow the In the normal enlargement of the jaw there should be a widening apart of the cuspids. If that does not occur, the lower arch or mandible is held in its position at that period of life, because of the locking of the cuspids—the upper cuspids locking the lower cuspids; the stress on the lateral sides of the upper jaw prevents the enlargement of the arch in that direction and so you have a narrow upper jaw. But neither of these causes prevent the continued growth of the unerupted teeth, and as they grow downward toward their proper relations they eventually erupt externally of the temporary teeth that are in place, and by that time there has been an eruption of the upper incisors very nearly where they should be, but apparently much beyond where they should be, because the whole mandible is undeveloped; and that lack of development is in part due to extreme locking, especially by the cuspids of the upper jaw and also by the overbite of the temporary molars of the upper. That produces what we call distal occlusion.



In a somewhat similar condition, where the overbite is not great enough to cause this locking, and thereby prevent the normal development of the mandible, it may produce another condition of affairs and that is that the lack of development across the cuspid region allows, later in life, the eruption of the cuspids externally to the arch, the pressure of the lips having forced the centrals and laterals, as they erupted, somewhat lingually of their normal development, and the result is that you have the four incisors pitching lingually, your bicuspids also more or less lingual and the cuspids erupting sometimes entirely outside the arch. This particular deformity varies, from a lack of space for the cuspids, to absolutely no space at all. The correction is simply a so-called widening of the upper jaw and proper placing of the teeth.

If that is true, and if that is recognized, how much simpler it is, as Dr. Kemple has suggested, to widen the lower jaw at the time when the lack of development is noted, widening in such a manner that the teeth must react through their occlusal plane on the upper cuspids, to force the upper cuspids out, and you affect that upper bone to such an extent that you get exactly the development of it which would be normal, and having established a normal size of the upper arch the teeth develop in a normal relation.

That, I think, is the gist of the paper to-night, to point out that these cases should be studied, practically, before they occur, and that irregularities, when we come to know them thoroughly, will be treated before the appearance of the permanent teeth, and while they are still in the bones. If that can be done the whole problem will be solved, because the teeth which we will be obliged to retain then, will only be the temporary teeth, and all the little mistakes of over-widening or underwidening will amount to nothing, because they are to be lost and having, in the later development, increased the nasal space, having taken away the nasal obstruction and so restored this body to its proper functions through nutrition, when the permanent teeth come in the child will have an orderly set of teeth.

Dr. M. I. Schamberg, New York.

The portion of Dr. Kemple's paper which I heard, impressed me with the fact that inter-dependence of facial development with the development of the normal arch can not be too strongly impressed

upon those who are working in these respective fields. In other words, the rhinologist and the laryngologist must appreciate the dependence of the normal development of the teeth upon the relation to the development of the nasal chamber. This must be impressed upon the mind of every one who has ever seen a case of ankylosis of the jaw, showing the complete lack of development of the mandible with a pronounced receding



chin, one which gives the face an appearance which permits of an immediate diagnosis as soon as the patient enters the office. So any practitioner, dental or medical, who has ever observed the mouth conditions in a patient suffering from adenoids must recognize the co-existence of the deformity.

Many of you who were present at the meeting of the First District Society in New York City, when Drs. Brown and Brophy had a rather interesting discussion upon the method of treating the deformity that befalls children from heredity in the form of cleft palates, must have been impressed with the importance of the etiological factors in the trouble. Each of these gentlemen was adopting slightly different methods to bring about the same end, but they both realized that the failure of the closure of the cleft was largely due to a forcing apart of the two lateral processes in the embryo, and they both aimed in their treatment to re-establish that normal relation. I speak of that because when the etiological factor is solved we will be well on the way of curing the condition.

I see many cases daily where the relation of the nose to the mouth -the development of the remainder of the face-is largely influenced by conditions within the mouth, and I do not believe that the limited arch spaces that are frequently noted, due to contraction of the bone, are influenced only by lack of bony development, but are due also to a failure to use the parts. In other words, when a patient breathes through the mouth the nasal mucous membrane becomes thickened, the arch, as Dr. Kemple has said, is raised. You usually find in these patients a very high arch and an unnecessarily long, soft palate, one which tends to make the speech more inarticulate, and improved mouth conditions in these cases, while they may not exert a direct influence upon the bony development of the nose, certainly induce nasal breathing, and nasal breathing re-establishes a normal condition of the nasal mucous membrane. Any of you who may have had operations performed upon the nose, and had cocaine placed in the nose, can readily realize the immense difference when the mucous membrane is contracted by the use of cocaine as compared with the congested membrane prior to the application of the cocaine. It is a pronounced relief; in fact, public speakers when they are troubled with acute coryza and are about to deliver a lecture will procure relief from the rhinologist by having him spray the nose with cocaine which frees the nasal passage temporarily and makes breathing much easier.

So I believe the development of the nose, both the bony parts and the soft tissues, is largely influenced by the treatment Dr. Kemple advises in connection with orthodontic methods.



One more point, and that is in reference to the irregularities curing themselves. That was the idea many people held until recent years—that many of the irregularities of children's teeth will take care of themselves. There is no more mistaken layman's theory than that, and unfortunately it penetrated into the dental profession for a while. Malocclusion is to be regarded very much as any other disease. Disease seldom stands still; it either progresses toward a cure or gets worse, and I am equally sure that any irregularity of the teeth tends to get greatly worse rather than to readjust itself. It would be a mere matter of chance if the tooth did come to be regular after there was a pronounced deformity. Of course, during the eruption of children's teeth the alignment is often poorer in the beginning than when the jaws are full sized, but they are conditions which are not recognized as decided deformities.

Dr. Wm. H. Cruman, Philadelphia.

I am a dentist and not an orthodontist. I recognize there is a wide difference between the two. I have reached a point, however, in my study of orthodontia to know when a case is presented,

whether it belongs to me or to the specialist, and I have found a good deal of satisfaction in sending cases to some one who I thought could do better for the patient than I could.

To me the most impressive point in the paper is the great change that has taken place within comparatively few years in the treatment of this subject.

I quite agree with the essayist's suggestion as to beginning early and I regard that as a very important point. Quite a number of cases which I have met, and some of them almost beyond remedy, no doubt began with the eruption of the first permanent teeth a little bit out of line and pushing the opposing teeth still further out of position. In that way I have no doubt a number of cases of mandibular protrusion have been developed, and that very little attention at the proper time, in infancy, would have corrected it, and in a number of cases in my own experience I have succeeded, I believe, in preventing what would have been a very serious case of malocclusion by beginning at the proper time.

It impresses me that this specialty within a specialty is opening a very wide field for the oncoming men, more so than for those who, like myself, have become settled in certain lines of practice.

I appreciate the paper very much indeed, not only for what it says but also for what it suggests; I consider it a very valuable essay and you will doubtless regard it as more valuable still when you come to read it more carefully in the proceedings and digest it and see more fully what it is intended to convey.



Dr. Joseph Head, Philadelphia. I was very much impressed by Dr. Kemple's paper; I consider it covers a subject that cannot be given too much attention.

When, in looking at the works of nature, we see the stars, and observe the planets whirling through space, we are appalled and our intellect fails because we cannot in any way understand it.

When, as in a case like this, the problem comes down to a position, in its simplicity, that our minds can grasp, we even then are still more appalled to find that in the plain, ordinary, everyday, mechanical operations Nature shows a master mind and a grasp of the situation which, if we as mechanics had to do the same thing under anything like similar conditions, would make us throw up our hands in despair.

For instance, here we have a little child with the baby teeth in position up to the age of four or five years; inside that jaw there are above the baby teeth, men's teeth, to be slipped down as these baby tooth roots are absorbed, and to be put in their proper position. the difficulty of excavating a root or of exploring a lower root canal is child's play compared with this. When we see the wonderful plan it makes us full of reverence for the master mind that can accomplish such a thing in such a way. Just as we know that where a railroad track is being elevated and still kept in operation, if one part of it is put out of place the whole road is thrown into confusion, so if any of this procedure is interfered with, irregularities take place. instance, the child's teeth to-day are in position and there is an adenoid, or third tonsil, which fills up the opening between the nose and the mouth so that proper breathing is impossible. One of the things which tends unquestionably to the development of the nose is the passage of air through it; when we breathe in the muscles of the nose tend to pull the tissues apart, and when we breathe out air pressure is exerted all through the nose which tends to push the plastic bone out, and not only that, but exerts air pressure in the antrum at other parts, so that we can easily see that if a child's teeth are kept in the natural arch so that the second teeth can come normally there never will be that kind of mouth we so often hear of as a mouth that is too full of teeth.

Dr. Gillette, new York.

Unfortunately I arrived only in time to hear the concluding paragraph of the paper, but from that and what I have gathered from the discussion,

I desire to express my satisfaction with the doctrine of taking care of these cases very early in life. It seems to me that is the only satisfactory solution that we can look forward to.

The closing paragraph of the paper touches on a subject in which



I have a particular interest at this time and I would like to ask Dr. Kemple if he can give me any information on this point: In case there has been arrested development resulting in a narrow arch, persisting up to adult years of from twenty to twenty-five years of age, what may we expect in the way of development of the allied boney parts in case the arch is then widened?

I desire to thank Dr. Kemple for his paper; he has taught us much that we did not know before, and has gone to the root of the question, and it strikes me as very fitting at this time that this subject should be brought out in the clear, concise way in which Dr. Kemple has presented it to-night.

I do not feel at all capable of discussing the paper, and there is only one point I feel like talking on at all, and that is on the subject of mastication—chewing. That is a matter which is brought to our attention every day. People constantly ask the question. "Why is it the teeth of to-day are in such a condition that they are decaying so rapidly?" I tell my patients invariably that the fault with American teeth is the lack of chewing. If we would use food which required more mastication we would necessarily have better teeth. If the teeth were used as the Lord intended them to be, and as Dr. Kemple says the savages and semi-savages and the semi-civilized people use their teeth, then there would be very much less work for the dentist; we would have better developed jaws, the teeth would erupt in their proper positions and be better teeth.

Some people seem to think that to masticate is vulgar. A young lady in my office recently was criticizing her father for his habit of masticating vigorously, but I told her that was the secret of his good teeth—his teeth are like ivory, while hers are like cheese!

Dr. Ottolengui spoke of the contracted arch; the essayist stated that mouth breathing would cause its contraction, and that has been my feeling; but Dr. Ottolengui says he does not believe it; that he thinks it simply retards the spreading of the arch. I believe that Dr. Kemple is right. I have seen cases where the arch was round and apparently perfect, and after an adenoid condition had existed for some time the arch became elongated and narrow.

Dr. Ottolengui. At what age, Doctor?

Dr. Watkins. Five to eight and ten. So that the shape of the arch is completely changed from the mouth breathing, and I feel that too much stress can not be put upon that point of operating for adenoids to prevent mouth breathing.



Dr. C. W. Ualentine. Englewood, n. J.

I gather that adenoids necessitate mouth breathing. If mouth breathing could be prevented would the adenoids disappear without surgical operation for instance, by having the nurse or patient hold the chin and make the child breathe through the nose?

In reply to Dr. Watkins I desire to say I made a statement that in my belief the narrow arch re-Dr. Ottolenaui. sults from mouth breathing-not because mouth breathing reduces the width of the arch, but because it prevents development of the arch. Dr. Watkins disbelieves that because he has seen one or more cases in which a rounded arch became an elongated one. That is not any proof unless you measured your rounded arch across the molar regions and then measured your elongated arch and found it was narrower across those regions. I have admitted-and I claimthat the incisor region will grow to its normal position, and perhaps even to an abnormally prominent position; an arch of that kind will naturally be totally different in shape, and, in proportion to its length, will be a narrow arch; but it will not literally be a narrower arch than it was before; it will have the same width across, but will be longer. Dr. Kemple says not. I have had one case in particular under observation which I have been watching since the child was two years of age; in that case the surgeon has declined to remove the adenoids; the child is now four and a half years old, and I have seen an elongation of that upper arch coming on, and an apparently narrowing of this arch. But there is no difference in the width across the molars. One sees these cases even up to ten and eleven years, with the temporary molars still in position. I believe that in the majority of these cases the molars are little if any further apart than they were when the child was four years old, but the development anteriorly has made the jaw much longer and, there being the same width, you call it narrow. I do not think it is actually any narrower, I think it is simply a lack of development.

We have heard to-night a paper of vast interest: it is unfortunate there are so few papers of Dr. Wilbur M. Bailv. this character presented before dental societies. new York.

About four years ago I read a paper on a kindred subject, and at that time I went to the Academy of Medicine and made a careful review of the literature appertaining to malocclusion, or irregularity of the deciduous teeth, and the effect of this irregularity upon the bones of the face.

Dr. Kemple has brought out in his paper this evening many points of great interest. One that I call your attention to particularly is that



as early as two years of age you will often find irregularity in the deciduous teeth. If you stop to think of the development of that period of life you will recall that the bony structure of the maxilla and also of the mandible is very slight, as compared with that of the alveolar process.

Another point is this—the relation of the alveolar process to the maxillary bone; they develop separately and distinctly from each other. One, however, has an effect upon the other, and whereas the bone does not affect the alveolar process, the alveolar process has some effect in the development of the bone, and the great mistake is made by so many of diagnosing this condition by mere casual observation.

At a certain point in the alveolar process these teeth develop, and if the developmental landmarks, as given by the position of the deciduous teeth, are not observed you will probably pass over them and have decided irregularity of the permanent teeth.

Dr. Varney Barnes has made a number of measurements of the interstitial spaces, as Dr. Kemple has called them—although these have been termed the inter-proximal spaces by Dr. Black—and has ascertained the inter-proximal spaces found between the deciduous teeth in the incisor regions, that when development has taken place properly, the width of the tooth plus the space will give the width of the incoming tooth.

The inter-proximal spaces have not been touched upon in the discussion of this paper, but the subject is of such great value that I have ventured to refer to it.

The discussion brought out by the paper has been gratifying.

I will not attempt to reply in detail to each one that has spoken, and instead of taking them in order, will begin with the last speaker.

Dr. Daily has referred to the measurements made by Dr. Varney Barnes of Cleveland. I would take exception to the acceptance of any definite measurement of teeth or arches to establish an absolutely accurate method by which to work, because of the fact that not only do the jaws vary, but the size of the teeth vary in the same mouth to such an extent that very often if you placed those teeth in their normal relation, you would not have perfect occlusion. I would say the same with regard to the measurements that Dr. Hawley has made in his effort to establish an arch as a criterion; he found that the size of the teeth varied considerably—so much so, I believe, that he found the arch he has given us is an approximation, and not an accurate measurement, of what it should be.

As to Dr. Valentine's question as to the adenoids atrophying if the



child was compelled to breathe through the nose: I think that is a question which it is just as impossible to answer as it would be to compel the child to breathe through the nose. Nose breathing might be compelled for a small fraction of the twenty-four hours, but the child would breathe through the mouth during the greater part of the time. Perhaps in cases where the adenoids were not developed to a great extent it might be possible.

Dr. Watkins spoke of the great importance of mastication; the point lies in the fact that mastication acts as a stimulant by inducing an increased flow of blood to the parts and consequently increased nourishment. We all know from the treatment that is in operation in various sanitariums for tuberculosis of forced feeding, that compelling the patient to take an increased amount of nourishment—more nourishment than he utilizes in his daily work—will cause the patient to increase in weight. Exactly the same thing takes place in the jaws, when they are used for mastication; an increased amount of nutrition is carried to the jaws.

If I understood Dr. Gillette's question properly, he asked what development might be expected from treatment as late in life as from twenty to twenty-five years of age. I would feel very uncertain indeed about the development that would follow at that time of life, especially in expanding the upper arch, although a gentleman told me in Boston a short time ago that he had a patient of the age of twenty-four who had been up until that time a confirmed mouth breather, and after treating this patient for malocclusion—I do not know just what type of malocclusion existed—the patient breathed through the nose. But I have never had experience with patients of that age.

Dr. Ottolengui spoke of the narrowing of the upper arch. I believe a great many statements have been made, particularly in orthodontia, that have been statements of ideas rather than of facts. Thus far there has not been opportunity for sufficient observation along these lines to enable one to speak positively as to whether the arch becomes more narrow or whether it simply remains stationary. But we know that the slightest pressure from the muscles will bring about a change in very young bones, and we also know that the mouth is opened partly through the action of the buccinator muscles, which form a part of the mouth, and in contracting there is a tendency to draw in the rami of the jaw; at the same time, with the mouth open, it would cause a dragging or a slight tension of the masseter muscles working on the diagramatic arch, and that arch in the young child extends laterally from the maxillary bone



proper, perhaps nearly three-fourths of an inch; that would practically act as a lever in the alveolar arch.

That is only a theory with me; I have not made sufficient examinations of arches to know positively what change does take place, and that can only be learned by actual measurements of the arch at regular intervals from infancy up to manhood.

On motion, a vote of thanks was tendered to Dr. Kemple for his very instructive paper.

On motion, adjourned until Wednesday, July 18, 1907, at ten a. m.





Second District Dental Society. Special Meeting, May, 1906.

Discussion of Dr. Conzett's Paper.

We have been doing a little work along these lines in New York City, and I can only endorse and corroborate what Dr. Conzett has told you.

Since we adopted these methods, we have reduced the time required for such operations, the results are more satisfactory and the patient is less troubled by the hand pressure than by the automatic mallet. The ease with which the enamel is cleaved and the cavity prepared when scientific principles are applied is quite astonishing, and when we compare the old methods with those suggested by the essayist, it seems strange that we have not adopted the new ways sooner.

A difficulty is sometimes found in undermining the dentin, but I have learned that a very small bur revolving quickly, especially if it is a new bur, performs the operation so rapidly that the pain is very slight.

There are innumerable factors which go to create

br. C. C. Leroy. failures or success. The essayist says that the matter has gotten down to such a scientific basis that by the application of given sized pellets and a given number of blows for each character of pellet used, definite results can be obtained in filling. But these are not the only factors that enter into a successful filling. There is the factor of personal equation, the factor of carelessness on the part of the operator, and that perhaps is one of the main considerations, as for instance where the plugger breaks through the rubber dam, and little things of that kind.

Consider the preparation of a filling in the interproximal space; it is not the habit of many to cleanse the tooth next to the one being filled, yet there may be plaques adhering to these surfaces which will be carried into the gold by the plugger point if we are not very careful.

Some years ago I wrote a paper along similar lines, which I termed "Minutiae; The Little Things in the Filling of Teeth." I did not give such scientific definitions as Dr. Conzett has, but we live to learn, and since Dr. Black's method has been adduced, we have profited by it. We have our ideas in the East as to extension for prevention; we believe it to be good practice in some instances; but in the cases the essayist mentioned, where he said he thought it good policy to use gold of greatest specific gravity, I desire to say that I think in that character of cases we need not extend for prevention, to the extent that the essayist seems to think should be done in all cases. In that character of teeth I do not



think we are warranted in carrying the extension so far, while in the class of teeth where the specific gravity of the gold should not be so great, it would be policy to cut further. In many cases, however, there is a limit. Probably what would best prevent caries in some teeth, would be covering it with a gold cap; although I do not think that is the proper practice, still the only thing perhaps that would prevent that character of teeth from decaying would be some form of covering absolutely preventing secretions from coming in contact with the tooth structure at all.

Dr. Morris.

I would like to ask the essayist, if in the preparation of a cavity, he always extends it through fissures to the mesial approximal space, as he did this afternoon; even though the fissure is practically perfect?

Dr. Ketcham.

I would like to know whether Dr. Conzett uses non-cohesive gold.

I would like to know if, in that sort of a preparation, the buccal and lingual walls and intervening dentin are on a straight plane throughout.

Dr. Conzett. No, the dentin curves slightly.

I would like to ask Dr. Conzett whether the preparation of the cavity he showed this afternoon ever affects the vitality of the tooth.

Dr. Provost.

In talking with some gentlemen to-night, the question was suggested as to whether in cutting the teeth in this way, a labial or buccal cusp might not split off.

I would like to ask whether it is the practice in the preparation of cavities by this method, to cut away all enamel which is not supported by dentin; whether that is the invariable rule or whether sometimes it may be supported by cement.

In the first place, I have to thank you for **Dr. Conzett**, handling me so kindly.

Dr. Leroy spoke of the personal equation entering into the successful manipulation of gold, and of cavity preparation. That is entirely correct, just as it is true in any work, whether it be the filling of teeth, the painting of a picture, or anything else. The personal equation must enter very largely into all our operations. We may instil these scientific principles into the mind of one man and get absolutely no results, while with another man we may procure the most beautiful fillings. One of the very best men I know on theory, is absolutely the poorest operator of my acquaintance. A man must have mechanical ability,



ingenuity and digital dexterity to succeed practically. I never insist that a man must do a thing in a certain way. If he can make a successful filling in his own way, I do not ask him to adopt mine. But I believe there are certain basic principles and that a man of ordinary ability, by following these, will get better results than otherwise. I believe that any man, by using the methods laid down by Dr. Black and his followers will obtain better results than he had before.

Dr. Leroy also spoke of carelessness. Unquestionably that is a factor which enters very largely into all failures. A man may have the fundamental principles so thoroughly instilled into his mind that he knows them from A to Z, and yet from carelessness will destroy the good results he might otherwise obtain. He also spoke of the cleansing of the teeth before operating. This is one of the fundamental principles laid down by Dr. Black and others. Before adjusting the rubber dam, I make it a practice to cleanse the teeth thoroughly, and after adjusting the rubber dam to go over the surface of the teeth in view with alcohol, so as to produce a thoroughly aseptic condition and remove all material so that the rubber dam will not slip off, and often it is almost impossible to take off the rubber dam without tearing it.

Dr. Evans* misunderstood me. He said I made a distinction in operating on certain teeth, and he spoke about certain teeth decaying very rapidly while others would not, and evidently thought I attributed that to something inherent in the tooth structure itself. If I conveyed such an impression I desire to correct it, because I do not believe there is any appreciable difference in the tooth structure. I believe—and Dr. Black has quite thoroughly demonstrated that fact—that the tooth structure is practically the same. With some there are teeth in which decay occurs more rapidly than in others, and we believe that is because of the environment in which the tooth has been placed. I believe, through the researches of Miller, Black and Williams of London, that teeth, even though of defective enamel, may be in immune environment for years and not decay; but just as soon as a period of susceptibility arrives, these teeth will decay and we have no assurance that a person who is immune to-day will be so to-morrow, or two, or three, or five years hence; and we know there are periods of immunity and of susceptibility. Nor is it because teeth have changed their characteristics, but because there has been a change in environment. The doctor says it might not be necessary to cut teeth which are hard and not decaying, so far as the others. Perhaps that is true; but we have no assurance that the condition of immunity will continue. Therefore I suppose the only safe way is to cut

^{*}Dr. Evans's remarks not supplied by the stenographer.—Ed.



our cavities far enough to carry them out into the territory of reasonable immunity.

Dr. Frazer asked about the operation of our gold. And Dr. Ketcham asked about the use of non-cohesive gold.

We use both non-cohesive gold and cohesive gold. The non-cohesive, as you all know, is one of the very best preparations we can possibly use for the preservation of tooth structure, because of its adaptability to the walls of the cavity. In preparing our non-cohesive foils we use it in quarters and halves of the full sheets; the full sheets are rarely used. We take a half sheet of gold and fold it upon itself in a ribbon shape until it approximates the width of the cylinder we desire to use. Then it is rolled up on a hairpin or hatpin or similar article and we use these cylinders in the gingival thirds of molars and bicuspids and our quarter sheet cylinders in the buccal angle and the lingual gingival angle and press the half sheet cylinder in between the two cylinders which we have already placed there. (Dr. Conzett here exhibited photographs illustrating the method referred to.)

Dr. Ketcham asked me if we used the non-cohesive foil in the incisal anchorage. No; never. Because that must depend upon our gingival anchorage. (Dr. Conzett illustrated his meaning by a drawing upon the blackboard.) In making a filling of this kind we must depend entirely upon our cohesive foil.

Another gentleman asked me if I always extended the cavity through the fissure as I did this afternoon. In similar cases to those shown this afternoon I do. Where the fissure extends clear through the occlusal surface of the tooth, I extend the cavity until I get clean, smooth enamel. In cases where there is an arch of enamel running over I do not always cut through it, if I can get sufficient anchorage without doing so.

Another place where we use non-cohesive gold is in cavities in the occlusal surface of bicuspids and molars.

I want to emphasize the point that these cylinders must always be placed on end (Dr. Conzett illustrated this method by reference to plaster casts).

After the soft foil has been inserted we commence on the occlusal surface with our cohesive foil and begin building forward from the occlusal surface and then from the soft foil in the gingival third until it effectually anchors the soft foil in place.

Some gentleman asked if the cavity preparation affects the vitality of the teeth.

Not any more so than any other cavity preparation. I will not say a pulp has never died under a filling of this kind, but the percentage is not



as great as it was under the old method. If we study our conditions, our occlusions and the strength of the teeth, we can always overcome that, because if there is not sufficient strength we can build over it, which we should do if there is any doubt in our mind at all as to the ability of the cusp to carry the load that is to be put upon it.

Dr. Ash asked if it is the practice to cut away all the enamel, or to support with cement. Yes, it is the practice, and I should say the invariable practice to cut away all the enamel, where there is any trace left, for otherwise it will surely break down, for as you know, the enamel has very little, if any strength. Here, again, comes in the study of conditions, but it is a matter of judgment. There are places where we can build up the enamel in various ways and preserve it so that it will retain its lifelike appearance. But it is impossible to lay down any hard and fast rules and say what we must or must not, or can or can not, do, in any given case. We must learn to study conditions as they come to us and then, to the best of our ability and judgment, use the best method we can for the salvation of teeth, together with what skill we may possess with the aid of scientific methods—and by conscientiously carrying out the rules we will attain results which we never have been able to reach before. I know that has been my experience, and it will be yours if you will conscientiously carry out this system which has been laid down for us by Dr. Black.

On motion a vote of thanks was extended to the essayist.





The American Society of Orthodontists held their seventh annual meeting in Detroit during the first week of October. Judged by the quality and nature of the papers and discussions this was one of the most remarkable of the meetings of the year, and one of the best in the history of the society.

As compared with a purely dental meeting this one was quite unique. A dental society having not over fifty men in attendance would scarcely attract attention. But this gathering of a small but devoted band of specialists was important, because of the fact that every man present was capable of intelligently discussing the topics presented by the essayists. The papers were all above the average, but three in particular will attract world wide attention when published.

Noble Metals
Recommended for
Appliances.

The President, Dr. H. A. Pullen, made an earnest plea for a more extensive use of the pure metals in making regulating appliances. He pointed out that in gold, with its alloys, and irridio-platinum, the orthodontist may accomplish all his purposes,

and he raised a number of questions which he hoped would be more



scientifically studied, to the end that true answers may be found within a short time. The almost universal use of German silver is prevalent, in his opinion, partly from habit, and partly because it is more convenient to purchase fixtures ready made, and because until very recently no dealer seemed willing to make appliances other than of German silver. These ready-made bands and arches of course look well when first bought, being handsomely gold plated. But in the mouth this plating frequently disappears very rapidly, and considerable discoloration, if not actual foulness, often ensues. Teeth in contact with German silver often show metallic stains which it is quite difficult to remove. Dr. Pullen referred to the oft-repeated claim that German silver acts germicidally in the mouth, but this he thought might prove a fertile field for scientific investigation. At all events the nobler metals being apparently cleaner and at the same time effective, it becomes the paramount duty of the specialist to finally determine by scientific experimentation what metals should best be used in orthodontic work.

Resection of the IM andible.

Dr. Max Ballin, an eminent surgeon of Detroit, read a paper entitled "The Osteo-plastic Resection of the Mandible," and presented a patient upon whom he had operated with marked success. From

time to time it has been recommended that in cases of apparent overgrowth of the mandible a proper occlusion of the teeth, coupled with an improvement in the physiognomy, might be attained by recourse to surgery, the mandible being separated at two points, sections removed, and the bones rejoined. Dr. Ballin has succeeded in doing this, and deserves much credit for his wonderful technique which appears to be original. The patient had lost his molars, and this prompted Dr. Ballin to attempt to operate without exposing his wounds to the possible infection of the oral fluids. In this he was so successful that bony reunion occurred in three weeks without untoward symptoms. He made incisions from without, inward, along the internal angle of the bone, thus placing them practically out of sight. Reaching the body of the bone he dissected away the periosteum and bared the bone, which was then resected without at all passing through the gum tissues into the oral cavity. ends of the bones were sutured, and within three days the man was out of bed, and in three weeks left the hospital. The result from a surgical



point of view was marvelously fine, and the doctor is to be praised for his extraordinary technique. At the same time it is an operation which should be rarely needed or attempted.

The Blood Supply to the Ceeth. Perhaps the most remarkable paper was that presented by Dr. I. Norman Broomell. The source of the blood supply to the teeth is of such great interest to all dental practitioners that it is extraordinary that it has not been determined long ago.

True, the pictures in the text-books agree with peculiar unanimity, considering the fact that the illustrations seem to be entirely conjectural. In all, minute branches of main arteries are traced directly into the apices of the teeth. But many practitioners, basing their views on clinical experience, have for years doubted the theoretical picturings, and it has now been shown by Dr. Broomell that this apical blood supply, at least is most doubtful. Dr. Broomell has not completed his work, but so far as he has gone his results contradict any such hypothesis. His dissections, photographs and lantern slides created a genuine enthusiasm, his technique being as splendid as can be conceived. Up to date his research has covered embryonic teeth, teeth with crowns calcified, and teeth with crowns and the major parts of their roots completed. The investigation has included lower animals as well as the human jaws, and in no instance has Dr. Broomell found any branches from the main arteries entering the tooth roots. The Society of Orthodontists is to be congratulated upon having first received this magnificent paper, and also upon the fact that Dr. Broomell has promised them another paper next year, giving his further work upon fully formed teeth.





New York's New Cocain Law.

The Drug Trade Section of the New York Board of Trade and Transportation has sent to its members copies of the new law with relation to the sale of cocain, which was signed by the Governor on June 5. It is known as Chapter 424, Laws of 1907, and took effect September 1, 1907. The following is the complete text of the law:

Chapter 424. Laws of 1907. AN ACT

To amend the penal code, in relation to the sale of certain drugs. The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. The penal code is hereby amended by inserting therein a new section to be section four hundred and five-a thereof and to read as follows:

§ 405-a. It shall be unlawful for any person to sell, furnish or dispose of alkaloid cocain or its salts, or alpha or beta eucain or their salts or any admixture of cocain or eucain, except upon the written prescription of a duly registered physician, which prescription shall be retained by the person who dispenses the same, shall be filled but once and of which no copy shall be taken by any person; except, however, that such alkaloid cocain or its salts, and alpha or beta eucain or their salts may lawfully be sold at wholesale upon the written order of a licensed pharmacist or licensed druggist, duly registered practicing physician, licensed veterinarian or licensed dentist provided that the wholesale dealer shall affix or cause to be affixed to the bottle, box, vessel or package containing the article sold, and upon the outside wrapper of the package as originally put up, a label distinctly displaying the name and quantity of cocain or its salts, alpha or beta eucain or their salts, sold, and the word "poison"



with the name and place of business of the seller, all printed in red ink; and provided also that the wholesale dealer shall before delivering any of the articles make or cause to be made in a book kept for the purpose an entry of the sale thereof stating the date of sale, the quantity, name and form in which sold, the name and address of the purchaser, and the name of the person by whom the entry is made; and the said book shall be always open for inspection by the proper authorities and shall be preserved for at least five years after the date of the last entry made therein. Any person who violates any of the provisions of this section shall be guilty of a felony punishable by imprisonment of not more than one year or a fine of not more than one thousand dollars, or both.

§ 2. This act shall take effect September first, nineteen hundred and seven.

for Cocain.

Attention has been called previously in these Dentists' Prescriptions columns to the provision of the cocain law which went into effect in New York State last September, which practically prohibits sales of cocain or prepara-

tions of cocain between wholesale druggists, unless the wholesale druggist, who is the purchaser, is at the same time a registered pharmacist, physician, dentist or veterinarian. A new point in the law which is receiving the attention of dispensing pharmacists in New York is that which apparently debars pharmacists from filling prescriptions for cocain that have been written by dentists. The law does this by exclusion, for the text reads: "It shall be unlawful for any person to sell, furnish or dispose of alkaloid cocain or its salts, or alpha or beta eucain or their salts, or any admixture of cocain or eucain, except upon a written prescription of a duly registered physician, which prescription shall be retained by the person who dispenses the same, shall be filled but once, and of which no copy shall be taken by any person." The only exception to the sale or disposal of cocain preparations provides for the sale of such at wholesale upon the written order of a licensed pharmacist or licensed druggist. registered practicing physician, licensed veterinarian or licensed dentist. So the curious anomaly is presented of retail druggists being restrained from selling cocain preparations to licensed dentists and veterinarians or for their patients, while these are permitted to obtain it in any quantity from wholesalers on a written order. We do not believe that the provisions against the dispensing of cocain by retail pharmacists on prescriptions of dentists and veterinarians and preventing sales of cocain between wholesalers were drafted intentionally and of malice prepense, but that these provisions, or, more exactly, omissions, were the result of careless drafting, and we are confident that they will be remedied by amendments to the law as soon as the Legislature is again in session.— American Druggist.



Expression of Regret. Dr. W. D. Miller.

Whereas, Our honored and beloved fellow-member, Dr. Willoughby Dayton Miller, has been suddenly removed by death, the officers and Executive Committee of the American Dental Society of Europe desire immediately to express to his afflicted family and to the dental profession the sympathy and the deep sense of personal bereavement which every member of our Society feels in this irremedial loss.

K. A. DAVENPORT, President. J. W. Gale, Secretary.

hart . Littig . Brewster.

At a joint meeting of the Interstate Dental Fraternities of New York and New Jersey, held in New York July 12, 1907, the following preamble and resolution were passed:

Whereas, It has pleased our Heavenly Father to call our friends, co-workers, and founders of this Fraternity, Dr. John I. Hart, Dr. J. Bond Littig, and Dr. Richard C. Brewster, from their earthly labors, which they so faithfully and conscientiously performed, to their eternal reward; and

Whereas, They who were so faithful in friendship, generous in deeds, equitable and just to all men, kind and sympathetic in their natures, were wise counsellors, whose high sense of honor and consistency at all times characterized their professional and private lives; therefore be it

Resolved, That we, the members of the Interstate Dental Fraternities of New York and New Jersey, in session assembled, do record our deep sense of the loss which the dental profession and this Fraternity in particular has sustained; and be it further



Resolved, That we extend our heartfelt sympathy and sorrow to the bereaved families, and that these resolutions be spread upon our minutes and published in the dental journals, and that a copy be sent to the bereaved families.

F. C. Walker, Vice-President for New Yoek.

T. A. Quinlan, Secretary for New York.

S. C. G. WATKINS, Vice-President for New Jersey.

F. G. Gregory, Secretary for New Jersey.



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SOCIETY: ANNOUNCEMENTS

State Society Meetings.

Alumni Society of the Angle School of Orthodontia, St. Louis, Mo., December 12, 13, 14.

Arizona Board of Dental Examiners, Phoenix, Ariz., November 11, 12, 13.

Illinois Board of Dental Examiners, Chicago, Ill., November 4.
Institute of Dental Pedagogics, New Orleans, La., December 31,
January 1, 2.

Nebraska State Dental Board, Lincoln, Neb., November 18, 19, 20. New Jersey State Board of Registration and Examination in Dentistry, Trenton, N. J., December 9.

Ohio State Board of Dental Examiners, Columbus, Ohio, November 26, 27, 28.

Ohio State Dental Society, Columbus, Ohio, December 3, 4, 5. Texas State Board of Dental Examiners, Waco, Texas, December 16.

Institute of Dental Pedagogics.

The next Annual Meeting of the Institute of Dental Pedagogics will convene in New Orleans, La., December 31, 1907, and January 1 and 2, 1908.

An exceptionally good program has been arranged by the executive committee. All dental college teachers are respectfully requested to attend. Full announcement of the completed program will appear in subsequent issues of this journal.

B. E. Lischer, Secretary-Treasurer.



Ohio State Dental Society.

The Forty-Second Annual Meeting of the Ohio State Dental Society will be held in the assembly rooms of the Great Southern Hotel, Columbus, December 3, 4, and 5, 1907.

An excellent program of papers, clinics and exhibits has been provided.

The educational features of such a gathering can be appreciated only by those who are in regular attendance at this and other leading societies, and every ethical dentist in the state should come and, if not already a member, should join.

Should you wish to stop at the Great Southern Hotel it would be well to have your rooms reserved in advance, as there are never accommodations for all; however, other first-class hotels are in the immediate vicinity.

Mark the dates off now, and come on the first day and remain through the entire session.

F. R. CHAPMAN, Secretary.

National Association of Dental Examiners, 1907-1908.

The following is a list of the officers of the National Association of Dental Examiners elected at their last annual meeting in Minneapolis: President, Frank O. Hetrick, D.D.S., Ottawa, Ka.; vice-president for the South, F. A. Shotwell, D.D.S., Rogersville, Tenn.; vice-president for the East, T. R. Henshaw, D.D.S., Middletown, Ind.; vice-president for the West, J. J. Wright, D.D.S., Milwaukee, Wis.; secretary and treasurer, Charles A. Meeker, D.D.S., 29 Fulton Street, Newark, N. J.

Committee on Colleges.—J. G. Reid, D.D.S., chairman, Trude Building, Chicago, Ill.; L. L. Barber, D.D.S., Toledo, Ohio; G. S. Todd, D.D.S., Lake City, Minn.

Joint Conference Committee.—J. F. Downsley, D.D.S., chairman, 175 Tremont Street, Boston, Mass.; R. D. McIntosh, D.D.S., Monet, Mo.; J. A. Hall, D.D.S., Collinsville, AIa.

Joint Tabulating Committee.—Alphonso Irwin, D.D.S., chairman, 425 Cooper Street, Camden, N. J.; J. F. Downsley, D.D.S., Boston, Mass.; J. G. Reid, D.D.S., Chicago, Ill.

Joint Committee on National Council of the N. A. D. E. and N. A. D. F.—H. C. Brown, D.D.S., 185 East State Street, Columbus, Ohio,



chairman N. A. D. E.; Geo. E. Mitchell, D.D.S., Haverhill, Mass.; H. W. Campbell, D.D.S., Suffolk, Va.; J. D. Patterson, D.D.S., Keith Building, Kansas City, Mo., chairman N. A. D. F.; H. W. Morgan, D.D.S., Nashville, Tenn.; Wilbur F. Litch, D.D.S., Philadelphia, Pa.

Dental Corporations Committee.—J. R. Wallace, D.D.S., chairman, "The Masonic," Louisville, Ky.; Charles A. Meeker, D.D.S., Newark, N. J.; C. P. Pruyn, D.D.S., Chicago, Ill.

Credentials and Membership Committee.—C. H. Oakman, D.D.S., chairman, 29 to 31 State Street, Detroit, Mich.; J. H. Wallace, D.D.S., Omaha, Neb.; W. G. Mason, D.D.S., Tampa, Fla.

Resolutions Committee.—T. J. Barrett, D.D.S., chairman, Worcester, Mass.; W. H. Collins, D.D.S., Vermillion, S. D.; W. C. Dalrymple, D.D.S., Ogden, Utah.

Publication Committee.—J. E. Chase, D.D.S., chairman, Ocala, Fla.; C. Stanley Smith, D.D.S., Cincinnati, Ohio; H. B. Purl, D.D.S., Kirksville, Mo.

Committee for Promoting a System of Uniform Examinations.— T. F. Turner, D.D.S., chairman, 721 Olive Street, St. Louis, Mo.; E. D. Brower, D.D.S., Lemars, Iowa; A. L. LeGro, D.D.S., Three Rivers, Mich.

Committee on Contracts and Accommodations.—Charles A. Meeker, D.D.S., chairman, 29 Fulton Street, Newark, N. J.

New Jersey State Dental Society.

List of officers of the New Jersey State Dental Society elected at their July meeting: Walter Woolsey, D.D.S., president, Elizabeth, N.J.; Frank G. Gregory, D.D.S., vice-president, Newark, N. J.; Charles A. Meeker, D.D.S., secretary, 29 Fulton Street, Newark, N. J.; Dr. Henry A. Hull, treasurer, New Brunswick, N. J.

Executive Committee.—Frank G. Gregory, D.D.S., chairman, 7 West Park Street, Newark, N. J.; Harvey Iredell, D.D.S., New Brunswick, N. J.; Charles H. Dilts, D.D.S., Trenton, N. J.; W. A. Jaquette, D.D.S., Salem, N. J.; Wallace F. Naylor, D.D.S., Somerville, N. J.

Membership Committee.—Dr. Oscar Adelberg, Elizabeth, N. J.; William G. Gelston, D.D.S., Camden, N. J.; Henry Fowler, D.D.S.; Harrison, N. J.; William T. Thompson, D.D.S., Asbury Park, N. J.; Thomas F. Martin, D.D.S., Rahway, N. J.



Alumni Society of the Angle School of Orthodontia.

The Second Annual Meeting of the Alumni Society of the Angle School of Orthodontia will occur in St. Louis, December 12, 13, and 14.

MARTIN DEWEY, Secretary.

Argyle Bldg., St. Louis, Mo.

Cexas State Board of Dental Examiners.

The Texas State Board of Dental Examiners will hold the next semiannual examination at Waco, Texas, December 16, 1907.

For further information, address,

Dr. Bush Jones, Secretary.

Dallas, Texas.

Nebraska State Dental Board.

The next meeting of the Nebraska State Dental Board will be held at the State House, in Lincoln, Neb., November 18, 19, and 20, 1907. All applications for examination must be in the hands of the secretary at least five days before this date. For any further information address the secretary.

C. L. LADD,

Secretary Nebraska State Dental Board.

Obio State Board of Dental Examiners.

The regular semi-annual meeting of the Board of Dental Examiners of the State of Ohio, will be held in Columbus, November 26, 27, and 28, 1907.

Only graduates are eligible to examination.

Application, accompanied by fee, \$20.00, should be filed with the secretary by November 16th. For further information address,

H. C. Brown, Secretary.

185 East State Street, Columbus, Ohio.



New Jersey State Board of Registration and Examination in Dentistry.

The New Jersey State Board of Registration and Examination in Dentistry will hold their semi-annual examination beginning Monday, December 9th, and continue through the 10th and 11th. Practical operating and practical prosthetic work will begin 8 A. M. Monday, December 9th. Photograph and preliminary credentials must accompany the application. Meeting held in the State House, Trenton, N. J.

For full information address the secretary, Charles A. Meeker, D.D.S., 29 Fulton Street, Newark, N. J.

Iowa State Board of Dental Examiners.

The Iowa State Board of Dental Examiners will hold its next meeting for examination at Iowa City, December 2, 3, 4, 1907.

Written and practical examination will be required.

For further information, address

El. D. Brower, D.D.S., Secretary.

Le Mars, Iowa.

